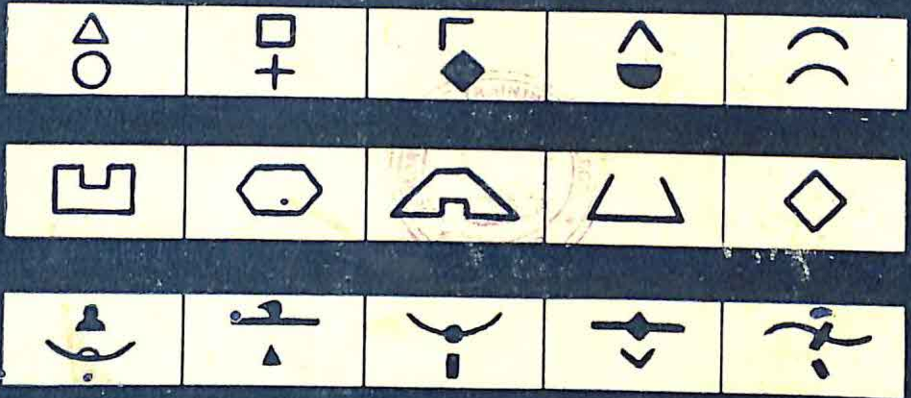
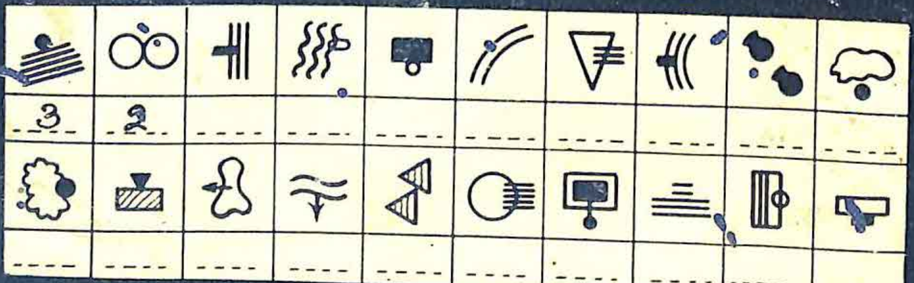
TESTING SCHOOL CHILDREN

AN ESSAY IN
EDUCATIONAL AND SOCIAL PSYCHOLOGY



WILLIAM STEPHENSON, M.A., M.Sc.



THE AUTHOR

William Stephenson M.A., M.Sc., Ph.D. was during the war Consulting Psychologist to the Army, with the rank of Brigadier. On his release from the Army he returned to Oxford as Director of the Institute of Experimental Psychology, having been Assistant Director there before the war. He then went to America as Visiting Professor at Chicago University and has been lecturing at many American Universities.

For description of this book see back of jacket

14/-
NET

667
~~667~~
~~4172~~
Psy.
51
SENIOR BASIC TRAINING COLLEGE
BANIPUR

TESTING SCHOOL CHILDREN

SENIOR BASIC TRAINING COLLEGE
BANIPUR

TESTING SCHOOL CHILDREN

An Essay in Educational and Social Psychology

★

By

WILLIAM STEPHENSON

M.A., M.Sc., Ph.D.

Fellow of the British Psychological Society; sometime Reader in Experimental Psychology, University of Oxford; lately Brigadier, Consultant Psychologist to the Army; Director of the Institute of Experimental Psychology, University of Oxford.

LONGMANS, GREEN AND CO.
LONDON · NEW YORK · TORONTO

TESTING SCHOOL CHILDREN

An Essay in Educational and Social Psychology

★

By

WILLIAM STEPHENSON
M.A., M.Sc., Ph.D.

Fellow of the British Psychological Society; sometime Reader in Experimental Psychology, University of Oxford; lately Brigadier, Consultant Psychologist to the Army; Director of the Institute of Experimental Psychology, University of Oxford.

LONGMANS, GREEN AND CO.
LONDON · NEW YORK · TORONTO

LONGMANS, GREEN AND CO LTD
6 & 7 CLIFFORD STREET LONDON W I
ALSO AT MELBOURNE AND CAPE TOWN
LONGMANS, GREEN AND CO INC
55 FIFTH AVENUE NEW YORK 3
LONGMANS, GREEN AND CO
215 VICTORIA STREET TORONTO I
ORIENT LONGMANS LTD
BOMBAY CALCUTTA MADRAS

25.11.93
7600

First published 1949

THIS BOOK IS PRODUCED IN
COMPLETE CONFORMITY WITH THE
AUTHORISED ECONOMY STANDARDS

PRINTED AND BOUND IN ENGLAND BY
HAZELL WATSON & VINEY LTD
AYLESBURY AND LONDON

SENIOR BASIC TRAINING COLLEGE
BANIPUR

CONTENTS

INTRODUCTION 7
CHOOSING CHILDREN FOR SECONDARY SCHOOLING . 13
THE MINISTRY'S SUGGESTION 24
PERSONALITY AS A BASIS OF SELECTION . . . 31
GENERAL ABILITY AS A BASIS OF SELECTION . . 40
INTELLIGENCE TESTS 46
TESTS OF CREATIVE IMAGINATION 60
PERFORMANCE TESTS 70
RECORD CARDS 82
PRINCIPLES AND PRACTICE OF SELECTION . . . 87
APPENDIX I 101
APPENDIX II 122
INDEX 126

PLATES

I ART-FORM TEST . . *facing page* 64

II ART-FORM TEST 65

III COLOURED INK BLOT . . . 80

IV A SUBJECT AT WORK ON ONE OF THE Q-BOARD TEST UNITS . . . 81

INTRODUCTION

Nearly half a million children leave the Junior Schools at eleven, and have to take their places in the new Secondary School system. Very important decisions indeed have to be taken at this tender age, when aptitudes are scarcely apparent, and when the child is often merely a reflection of his teacher's or parental ambitions. The decision that sends one child at eleven to a Grammar School and another to a Modern will be the most crucial pointer of their two young lives. For the very bright child it is easy: three per cent of the eleven-year-olds will almost select themselves for Grammar Schools. But for twenty per cent of the population of eleven-year-olds, and these all bright children, it will be largely a matter of chance whether they will be awarded a free place in a Grammar School (as the old Secondary Schools are now called), or remain behind to face the narrower horizons of the Modern Secondary Schools, narrower both educationally and vocationally, for, even at a modest estimate, thirty vocations and professions are within the reach of the Grammar School child—and these counted the most desirable—for every one or two open to the child in the Modern Secondary School. With so much at stake, it is small wonder that the Special Place Examinations have become the major anxiety of thoughtful parents and something almost to be dreaded by children.

How different things are in America, where, in the United States, High Schools (roughly comparable to our Secondary Schools) are open to everyone, where almost anyone who can read can go to a University, and where throughout there are virtually no competitive examinations and almost complete freedom from all the iniquitous pre-selection for vocations that is the *modus operandi* of these examinations in Great Britain. Borstal alone offers the same tolerance and freedom in England. Anyone leaving a High School in New York City is, on paper, as good as anyone else, and all have the whole wide world of American occupations and vocations open to them as reasonable possibilities. Similarly, any Bachelor of Arts in the States, on paper, is as well qualified as any other; but a graduate in England with a Third Class Degree is marked for life, and any with a Fourth Class might better have committed suicide. Yet these same men and women are, broadly regarded, the cream of the country.

It is with questions of this kind that we are to be concerned in the sequel. The 1944 (Butler) Act raised a hope that something of this same American tolerance of opportunity would be vouchsafed for the young people of Great Britain. There would be Secondary Schools for all. It is, of course, too early to say what this Act of Parliament will achieve; but clearly nothing like the American system is involved. There is to be no raising of all to equal status and opportunity, no forbearance for the slower and duller until they reach maturer ages. Instead, competition for select places in the Secondary School system is to be as acute as ever. The competitive element is even greater than it was, for now in grant-aided schools it is not capacity to pay fees that ensures entrance for one's child, but the results of an examination, which purports to measure the child's aptitudes and special fitness for a Grammar, Technical, or Modern Secondary School. Clearly it is time to take stock and to examine what this is about.

As is well known, the 1944 Act provides what is intended to be a new approach to the way the country's Secondary School places shall be filled. The old Special Place Examinations, in English and Arithmetic, with an Intelligence Test sometimes added, which our ten-year-olds sat each Spring for awards to Secondary Schools, is now to be replaced by a system of record-taking, supplemented (as before) by Intelligence Testing. It is considered that aptitudes and promise should be the decisive factors in allocating children to the different types of Secondary Schools, and not diligent learning or coaching in school subjects such as Arithmetic and English. From the Ministry of Education we read, for example:

> "Watch must be kept for the appearance of special aptitudes and marked abilities, though consideration must also be given to any strong inclinations of the pupil or the expressed wishes of his parents."
>
> (*The Nation's Schools: Their Plan and Purpose.*)

Now no one would wish to retain the Special Place Examination in its old-fashioned form, where a few ponderous questions were set in Arithmetic, and ten-year-olds were invited to write lengthy essays in the name of English. But it is not quite as simple as it may sound to fill places in Grammar Schools if justice is to be done to all the factors involved, social as well as individual. "Secondary Schools for all" is synonymous, in the minds of most parents, with "A Grammar School type of education" for all; but there are places for only ten to fifteen per cent of the population of our children of the appropriate age-range, and at least two or three times this proportion clamour for entrance, and feel hurt and frustrated when they are turned away. The choice, too, is so apt to fall on children with brains, but whose home background is unfavourable, offering little of stability and less of honesty of purpose, who leave off school prematurely, to swell the cinema queues of teen-age, and who become a dead loss to the Grammar School influence. These children have aptitude, but if social conditions are against them, is it sensible to send them to a Grammar School? We are familiar, too, with homes of a very different character, where sincerity and long-term ambition find a place: their sons and daughters may not be so bright, so smartly able, but they stay the course and turn out well. Who should turn these away?

It is all very well to recommend that parents have a right to express their wishes about a child's future, but how pathetic the institutional system which offers so little possibility of implementing them; and what are we to make of the strong inclinations of the pupils at ten or eleven years! A large proportion, on reflection, might elect not to go to school at all. Are petty whims, or opinions with little but ignorance to support them, to stand in the way of a child's future? True, there are forceful characters, perhaps, at eleven, if we are to believe Alice Massie's story about the boy undergoing an interview as part of his scholarship examination. The boy is asked, "Do you belong to any Youth Organisations?" He looks blank. "Scouts, Cubs, Cadets, Boys' Brigade, Youth Service, Band of Hope—anything?" "Oh, *no*, sir", says the boy. "Why not?" "I don't like them, sir." "Now, that's very interesting. Try to tell me why." A long pause—"They push you around so", said the boy. "There isn't any time for reading, or for exploring, or for making things." "But surely, making things——" "They make you make their makes", explains the boy.

But the most serious difficulties centre about the aptitudes and special abilities which, it was hoped, would provide the essential basis of selection for the different forms of secondary education. Some psychologists, at least, are not very happy about the Ministry's advice in this connection; they point out that *general* all-round ability, and not special gifts or aptitudes, characterises the child at ten, eleven, twelve, or even thirteen years of age. If this is the case, Directors of Education are to be faced with the task of selecting children on the basis of special abilities that do not exist; they will be driven to buy, on the open market, tests which purport to measure such aptitudes, but whose claim to do so is, to say the least, contentious. On the other hand, if it is decreed that selection shall be in terms of special aptitudes, then, with such hints as educational psychologists have at hand, it becomes an urgent matter for them to try to meet the Ministry's need by perfecting their techniques or by discovering others that will serve the purpose.

Moreover, to whomsoever the last word is to be given—to the parent, the child, the Headmaster, or the Director of an Education Department—the principles of selection must be made known to everyone concerned. This tends to be the weakest link in the long process of selecting children for secondary schooling: only the Director of Education knows what is happening. It is perhaps just as well that this is so! But the principles must be made known, even if the statistical and psychological difficulties are kept dark: parents like to have a viewpoint, and teachers like to know what is happening in at least general terms. It is perhaps unnecessary to stress this matter, but it is all too easy for it to be the one detail that it is nobody's business to attend to, and the one crucial detail that is completely overlooked. It is only now that Directors of Education are beginning to see the importance of letting their teachers know something, by lectures or meetings, about the way selection is organised in their areas. The following chapters are meant to serve this purpose, that is, to give parents and teachers the opportunity of reading about the problems, the difficulties, the techniques, of selecting children for the various schools of the country, whether Public or State. Perhaps I may be allowed to illustrate the significance of what seems to be a detail, by referring to an experience from another field, but which covers the point very well. During the recent war it was my privilege to look at the Army with the eyes of a psychologist, and I well remember seeing shell-exhaustion cases arriving after the Battle of Normandy at a hospital in bus-loads, every man in the lowest possible state of low morale and deep bewilderment. Yet to all intents and purposes they were being extremely thoroughly and well cared for. Buses had met the trains, dinner was ready as soon as the buses reached the hospitals, convenient lavatories were at hand immediately dinner was over, a brief medical examination followed without a moment's delay and with no queueing, and with no fuss at all the patients found themselves tucked up in bed by willing nurses waiting to receive them at the very doors of the doctor's rooms. Yet the men were miserable, not because of their illness, but because no one told them what was happening—no one had said, in effect, "You are going to stay here for three weeks, during which you will rest in bed most of the time, and after which you will all be better and ready to go to a convalescent centre for three weeks." So, too, for this all-important matter of selecting children for Secondary Schools, teachers and parents should be told, "Eleven-year-olds are to be chosen on this principle . . . for these reasons . . . by these methods. . . ." I have said that I hope that the present chapters will provide some food for thought in this direction: it is my purpose to examine the principles, reasons, and methods involved in the selection of children for different types of Secondary Schools. What I have to say, however, applies no less to the testing and "sizing up" of children for vocational guidance, to the selection of scholarship children for Public Schools, and to student counselling within the School, College, or University. A well-known educationist from Oxford, following a visit to the United States, came back with the opinion that psychologists had ruined American education. I write frankly as a psychologist who admires the American educational scene, which is incomparably more truly democratic, more tolerant, more in keeping with the psychological facts, more adequate socially, than ours; and I hold that if what America has achieved owes anything to psychologists, then the sooner we have more of them in England the better. Perhaps I represent the thinnest of the thin ends of the wedge in this connection. Whether this is so or not, it has been my hobby to be interested in mental testing, and in the psychological study of our social institutions, the former reaching into the analysis of human personality, and the latter into the methods whereby man becomes the social creature he is. In the selection of young children for different forms of schooling, these two hobbies and interests happily meet, for what can be done by mental testing is limited by the social setting in which these children are placed, and, on the other hand, the schools, homes, and colleges that socialise these children are little more than cages if they are filled with frustrated children and insecure pupils. What I have to offer, then, are reflections from both standpoints.

CHAPTER I

CHOOSING CHILDREN FOR SECONDARY SCHOOLING

IT is a worthy aspiration of most parents to do well by their children, to give them the best chance in life, and many, who are not even amongst the most ambitious for the welfare of their children, want them to be educated in a Grammar School. There are far too few of these schools, however, to go round, and therefore methods of selection have to be employed to pick the lucky children. In happier days it is possible that teachers will have to compete for pupils, rather than parents and children for school places as at present; indeed, for my part, I would like to see children applying tests to prospective teachers, to decide whether this or that school is worth going to, rather than to have to take part in present-day competitive selection procedures. But as things are, only a limited number of places are available in the special types of Secondary Schools, and the country has decided that, as far as possible, the children best fitted by natural gifts and promise should be given these places, without fee where this cannot be afforded, and with financial assistance where this is indicated, even for such items as the child's pocket-money. My purpose is to examine the principles upon which this selection is based, and to describe something of the methods by which it is undertaken.

It would have been excellent to present these principles and methods as a self-contained scientific system. But we are still far from being able to model psychology on the classical lines of Newton's *Principia*, with its half-dozen definitions, its three laws, and its eighty or so theorems, all derived from the definitions and laws by processes of logic, reasoning, and deduction. Nor, indeed, are the principles wholly psychological ones. Very broadly, nevertheless, I shall be concerned with a few definitions —for example, with what is meant by *general ability*, *aptitude*, and *intelligence*, and I shall discuss at least one principle on which much else depends. Upon these very modest foundations advice has to be given to teachers, especially to Headteachers, and to Directors of Education, about the best way of approaching the problems involved in the selection of children for secondary schooling. It is just as important, too, to let parents know what these selection procedures are seeking to achieve.

Let us begin, then, with a basic principle. It is derived from the psychology of human *needs*, and says, very roughly, that no child can profit adequately from schooling whose deeper needs are unsatisfied. This is obvious enough if we think of a starving child trying to learn Latin; but rather more subtle needs are involved than this.

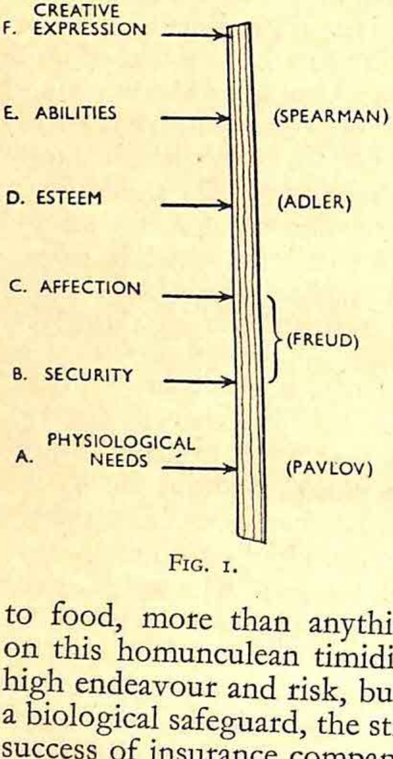


FIG. 1.

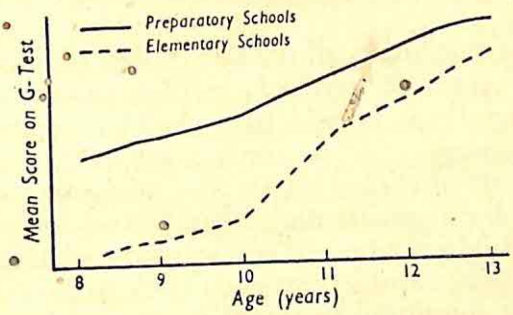
In the diagram at the left I show what I should like to call the stream of human needs. At its head there are the bodily appetites, such as hunger, thirst and sex, and the homeostatic functions which keep the blood-stream in a constant state of pressure, temperature and biochemical composition. Higher up the biological scale is the need for safety and security—a fundamental human need, only slightly less profound than the appetites. We need, crave, unconsciously seek, a certain basic security in life, next to food, more than anything else. Scorn is usually poured on this homunculean timidity, this apparent withdrawal from high endeavour and risk, but it is a real enough human failing, a biological safeguard, the strength of which is to be seen in the success of insurance companies. Still higher comes the massive complex of need to which the psycho-analysts have devoted their attention, the unconscious need for affection from others, for belonging to the family group, with its subtle and tortuous formations of guilt, anxiety, and all that the unconscious mind stands for. Poise, a sense of balance and a fitness to face reality, is the outcome of satisfaction of these needs. Still higher up the stream, and perhaps not so deeply involved, is a certain need for the regard of others, for the esteem of our fellows: it is not far

BASIC TRAIN

removed, when thwarted, from Adler's "will to power." Next, and less strongly, comes the urge to fulfil one's promise, to find an outlet for one's capacities, gifts, talent, abilities. The man who is a born artist, actor, player, has to give vent to his powers: he may have every physiological need gratified, and may be wholly secure and balanced in his affective need; he may have the high regard and esteem of his fellows; yet, if his abilities are not finding adequate expression in his career or his recreation, he is dissatisfied to this extent, and will be driven, however tenuously, to seek satisfactions or compensations for his wasting capacities. If we represent these needs by the letters A, B, C, . . . (as in the diagram), then, according to the principle I am describing, the proper fulfilment of any of these depends upon the successful gratification of all those below it. Thus, C cannot be properly satisfied unless B and A are already; E cannot achieve its ends unless all below it, from D to A, are adequately gratified. According to this, we cannot become freely creative (F) until all the underlying needs from A to E are reasonably satisfied in the personality. Nor can a child make full use of its abilities until it is fed, feels secure, is loved, and knows something of esteem and praise, all unconsciously.

I may be permitted an illustration, in concrete terms, of what is involved in this assumption. During the recent war I visited a large Centre in the Army to which redundant non-commissioned officers were sent for re-sorting and selecting. Inevitably a proportion of the men were found to be unsuitable, and were reduced to the ranks, or discharged from the Army (a matter, at that time, of some consequence to old regular soldiers). With the idea that every man should be given a chance to prove his worth, each was put through a month's training, a sort of refresher course, at the end of which the final decisions were made. Imagine, then, any entry of 400 men at this Centre. The Commandant saw to it that they had good food and medical attention (A). He gave each man an opportunity to regain self-respect (D) by insisting on a smart turn-out—much time was devoted to drilling on this account, and blanco and spit-and-polish were much in evidence. He had all the men tested for their *promise* and *ability* (as you see, he was an up-to-date officer, in touch with his psychologists), using intelligence tests and personality scales for the purpose, and resorting to record cards, so that each man could follow his natural bent (E) as far as circumstances permitted. The Company Commanders were experts at making the men "belong" to the company, at rousing the company spirit, and so gratifying something of the needs of category C. Here indeed almost everything possible was done to make the Centre a success. Yet all was far from well. The morale was lower than it should have been because the B needs were overlooked. Above all things the men felt their insecurity: soon they were to be sorted into the sheep and the goats, soon some were to lose their rank. Insecurity of this kind spells disaster to morale, and the training of the able men and the dullards alike suffered. The appropriate action, in such circumstances, would have been to satisfy the need for security at the outset, by eliminating the most probable failures, and by assuring the rest that no more would be demoted except for gross inefficiency. The refresher course could thereupon have had firm foundations: the company spirit, the spit-and-polish, and the progress and promise assessments would have grown into place like bones in an embryo, and the morale would have been complete and first-rate.

Now, only superficial need-situations are involved in this example, and much deeper, less obvious ones are referred to in the principle to which I have drawn attention. Our concern is with children at ten or eleven years of age, and they are usually well enough fed: but we cannot often say as much about their sense of security and feelings of adequacy. They are, nearly all, at the mercy of harsh strictures, dictated by their own unconscious minds, inhibiting their powers and warping their emotions. Everything we know about children suggests that even with all the care we devote to them in this country they are far from saturation-point with regard to the satisfaction of needs such as B, C, and D. Mental tests, for example, prove only too clearly the stultifying and inhibitory influence of a poor home and an Elementary School background, compared with the freer effects of a good preparatory day school and enlightened home. Thus, some Intelligence Tests to be described later produced the results shown in the following diagram. The children from what are likely to be the better home backgrounds were able to do these tests almost as well at eight as later, whereas those from the less adequate backgrounds fared poorly at the tests until they were twelve or thirteen years old, when they caught up to the Preparatory School boys. They catch up in this particular test, but



SENIOR BASIC TRAINING COLLEGE
BAN

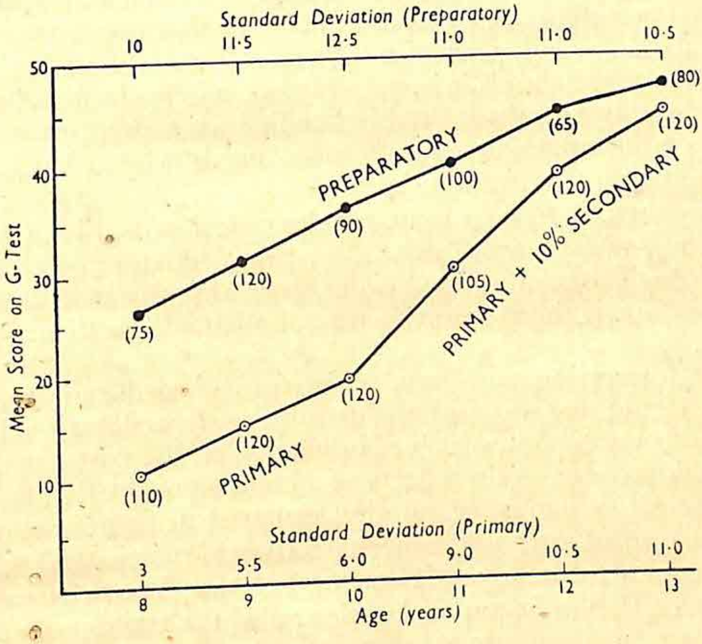


FIG. 2.—A G-test, primarily perceptual in nature, was applied to boys attending preparatory schools and elementary (primary) schools. The former are more highly selected, and it is not unreasonable to expect them to do better at the tests on that account. But the difference is more marked for the young boys. It will be seen from the standard deviations given at the foot of the diagram that scarcely a boy at eight attending elementary school gains a score as high as the poorest gained by eight-year-old preparatory school boys: yet by the time the boys are twelve or thirteen nothing like the same difference is apparent. A possible explanation of the poor show put up by the young elementary school-children is the lack of satisfactions such as B, C and D discussed above. They are *inhibited*, and are capable of much more.

in others they still have leeway to make up, often for the rest of their lives.

We shall have evidence of the satisfaction of "needs" again in the following pages. When the Norwoods and the Flemings, for example, in reports about which we shall have something to say in the sequel, suggest that personality rather than ability should be a prime basis of choice for Public and Grammar Schooling, the sounder objective that they should have had in mind is the selection of children who are not warped and inhibited by the lack of instinctive satisfactions such as A to D, and for whom alone the right conditions exist which will permit their capacities to come to full bloom and richest fruition. When the Dons at Nuffield College seek the conditions for a creative race of young people, one way to find them is at the end of this long stream, as the final possibility open to us, when all other needs are reasonably satisfied. And when we seek to select children for Public and Grammar Schools it is certainly not wise to look only at the child's ability and promise, his intelligence and aptitudes, oblivious of the undercurrents of social needs whose satisfactions alone give these terms a meaning.

This, then, is to be a basic psychological principle in what is to follow—that "needs" exist to be gratified, and in a hierarchical, biologically determined order, such that the best cannot be made of one if those below it are not adequately satisfied themselves.

One interesting corollary, which can be deduced from this principle and one or two basic definitions, has educational ramifications of some importance. Education in the past has tended to develop only certain aspects of a child's personality, deriving from social demands, or blindly, rather than from any explicit formulation of aims and objectives by educationists. Thus, the development of a boy's Character has long been the essential feature of Public School Education; and the training of Intelligence was fast becoming a characteristic of the pre-war Secondary Schools in this country. Here are two aspects of any child, differently emphasised in different educational systems, and I surmise that Education must always gravitate into narrowing channels of this kind. What, then, is to be the pattern for future generations of children—for example, of those who will issue from our Modern Secondary Schools? Clearly if, as a psychologist, I am to discuss the selection of children for schools, I shall want to make at least a guess at the answer, since it might influence the basis of choice.

There are many, psychologists and educationists alike, who maintain that the essential aim of education should be to develop each child's inherent personality and potentialities to the full. At first sight this seems acceptable enough, and it is in keeping with the principle of "need-gratification" to which I have just drawn attention. But matters are not quite as simple as this. "Needs" are not just inner impulses to action, they are also consequential upon *interaction*, upon interplay with the environment of persons, things, and institutions. One psychologist (Professor Gordon Allport) puts this more strongly, and says that needs, like skills, have to be learnt. What is true is that needs always represent a balance between inner impulse and outer conditions: even the talent of a Yehudi Menuhin is a need for him only in so far as the praise and understanding of his fellows, the realisation of his eminence relative to others, the adoration and enthusiasm of an audience, the subtle satisfactions of his own ideals and character (which are in turn socially dependent), are blended with the skill and artistry that hard work has fashioned. The same is true of the working-out of any aptitude or innate capacity: what they become is rooted in interbehaviour. Moreover, each of us has far more potentialities than any school system could possibly deal with. If my daughter, for example, is apt at standing on her head, must I necessarily have her gymnastic inclinations developed? She may also be gifted artistically, but does it really follow that the pursuit of this must be added to her curriculum? She may be able to learn almost any musical instrument, but why should she? And every other spark that she has for the kindling, must all these have their quota on the school time-table? Clearly not. At best, from amongst the available potentialities some become more valued than others, and some receive more attention from the school than others. Moreover, what has a school to do with the talent of a Yehudi Menuhin or a Picasso? Schools probably destroy more talent, indeed, and more aptitudes, than they ever bring to fruition—as I shall indicate later—and the ideas of schoolteachers about the development of personality are scarcely likely to be adequate, or even correct. When, therefore, the Ministry of Education asks that aptitudes and special abilities be an essential basis of selection for Secondary Schools, it is certain that only particular aptitudes are likely to be involved. We

~~667~~ ~~4172~~ 51

can be doubly sure of this when we observe that Parliament has decreed that our English educational structure shall retain, as before, the system of Public, Grammar, Technical, and Modern Secondary Schools with which we are familiar (although there are signs that Multilateral Schools are to come upon the scene), and that selection essentially consists of finding children who will be successful in these schools. Only those aptitudes, abilities, and personality qualities will be valued which ear-mark the children for these different schools; and the earlier in the child's life this ear-marking can be done, the better. The problem, as far as mental testing is concerned, is lock, stock, and barrel one of *selection*, of fitting children with as little actuarial error as possible into fixed institutions.

Now I have no objection in principle to selection of this kind, which is appropriate to the Armed Forces, or to big business concerns. A modern army could scarcely exist without the use of selection techniques to fill its needs, and any up-to-date factory selects its operatives on this basis. But the same procedure, for eleven-year-olds, serves to elect some to a privileged class, largely because they have attended a Grammar School, and it is to this that I see many objections. This cleavage is, I feel certain, a profound mistake, not because it opens the door to the professions for the selected few, but because it eats at the roots of equality by sapping the mood and blighting the enthusiasm of the great mass of our young people and of the citizens they become. The professions could be filled by the few, without dampening or destroying the uplift of the many, merely by making all attend one and the same type of school which could, of course, provide for Grammar, Technical, or Modern types of education as need be. The boarding schools for girls, in this country, manage something of the kind already; bright and dull girls are educated together. The segregation into Grammar and other streams, moreover, is unfair as well as wasteful. It is unfair, as we shall see, to sixty children who do *not* gain places in Grammar Schools, in comparison with every seventy who *do*; it is wasteful because if all children at eleven moved into one and the same type of Secondary School, the chances are that thirty per cent of them could and would gravitate towards Grammar School forms of education, compared with the fifteen per cent who do so at present. The 1944 Act promised Secondary Education for all; but somewhere the great vision of social equality in this promise has disappeared, lost in the fog of the existing structure of Secondary Schools into Public, Grammar, Technical, and Modern types. By Secondary Education for all was meant, in the minds of the men-in-the-street, education of a Grammar School kind, or along the lines of pre-war Secondary Schools: but this, I feel, is not at the core of the matter, for what is involved is not the Grammar School ideal, or fitting children into institutions to suit their aptitudes, but instead the spirit and mood of a whole country educated in a Secondary system which is the same in structure for all, and is free from any taint of class distinction and differences of opportunity. I am no historian nor politician, but I have no doubt that it is not the first time that legislature has missed the pulse of the country it represents, or of the needs of the times. We are in a changing world, caught in a whirlwind of social upheavals, and the first and essential object of the State should have been to make its children into social creatures, able and free to mix socially with all other children in the country (and ultimately in others no less). The man-in-the-street feels something of this in his bones; but our educators haven't realised this social aim yet. The Americans have. The most crucial aim of American Schools is to "socialise" their pupils, to ensure that as far as possible all will "get on" with all others as equals should, to eliminate distinctions of race or class (and the Negro problem should not be regarded as an exception to the rule, for very much of it is solved or in the process of solution in the States), to make opportunities equal for all, and *as little dependent upon aptitudes and special abilities as possible*. All the routine and petty customs of life, like their cars and washing machines, are standardised; children are taught to use their forks according to the socially accepted fashion; their very manners are standard products. Yet think of what is left over, free to develop! But, to return to this theme, on any count, America has achieved an astonishing measure of social equality for her polyglot immigrated peoples. In a hundred ways, some trivial and some profound, one notices this levelling and standardising tendency throughout the States. In the educational field there is almost complete absence of competitive examinations, even up to the B.A. and M.A. Degree standards, as though individual differences in ability had been ironed out; everyone goes to a High School, which fosters no segregations of the kind we have in the English school system for the same age-range; any ex-soldier can go to the University

25.11.93
1600

if he wishes to do so. These examples could be multiplied inside and outside the educational system. It is tolerance of differences, and equality of opportunity, brought down to earth. Of course it is gained at the expense of the show of early brilliancy which is so characteristic of the best of our English schoolchildren, but even in this matter the American catches up again, for his opportunities in the shape of post-graduate training far exceed anything we have to offer in Great Britain. It is a measure of the difference between us that we select children at eleven or thirteen, and thereby perpetuate class distinctions of a most unessential and even anti-social nature; the Americans select no one for anything until they are nearer twenty-two or twenty-three years of age, and everyone is left socially interchangeable as a consequence.

But not everything is standardised. The United States is the very hot-bed of mental testing. Babies are tested in their cradles, and every pupil has his mind probed into by mental tests twice a term. Most Americans know what their I.Qs. are (and all know roughly what this means). The College Entrance Examination Board tests tens of thousands of youths and maidens every year —not essentially to bar anyone from entering a College, but to apportion the students amongst the available Colleges. The well-known Psychological Corporation of New York tests thousands of prospective nurses, and spends thousands of dollars on the construction of a single set of tests for measuring scholastic aptitude. And the basis of all this, of course, is the frank acceptance of individual differences and *lack* of any standardisation in the inner potentialities of man. But all this testing is at the service of the teacher and the pupil, not at the call of selectors. Teachers are given these test results, so that they can do everything possible for the child, in the High School framework say, in relation to his abilities, aptitudes, attitudes, and the rest. Students are given the results, as a guide to their future, and as part of the counselling they all receive; and I believe that this counselling is one of the most important developments in the history of even that astonishing country. Aptitudes, abilities, and personalities are by no means ironed out, or overlooked. On the contrary, they know far more about them than we do in England, and any child can develop its own way in principle, subject only to the prime necessity of being no different from anyone else in class or caste.

The stage is set, then, for a study of mental tests in relation to the problem of selection in this country; but I have made it clear that I for one dislike the whole business of selection for entrance to Secondary Schools, and that the more worthy purpose of these tests is to guide and counsel the young (and indeed the not-so-young as well). As things are, however, the most pressing problem facing the school system is that concerned with the selection of the lucky few to fill Grammar School, and perhaps some Public School, places, and however much we dislike it, psychologists have to offer their technical advice on the matter.

CHAPTER II

THE MINISTRY'S SUGGESTION

HAVING accepted the inevitable, then, that children must be shepherded into Grammar, Technical, or Modern Schools at eleven, we must examine in some detail what mental testing can contribute to this procedure. Mental testing includes, of course, the use of tests and the assessment of personality along scientific lines, whether through the medium of an interview, or on the basis of day-to-day observations of the character of a child, or from the study of children's behaviour in social groups.

By way of such tests and by training teachers to keep careful records of the progress, interests, and characters of their children, the Ministry of Education believes that it is possible to make a sound assessment of any child's capacity and of its suitability and promise for one or other of the different secondary schools. There are always Intelligence Tests to fall back on for the measurement of a child's level of brightness; and aptitudes and special abilities, it is felt, can be spotted by teachers, even if no mental tests are available for the purpose. A combination of record-keeping, and perhaps the use of an Intelligence Test, is intended to replace the old competitive examination known to a generation or two of teachers as the Special Place Examinations as at least the core of the selective procedure for the eleven-year-olds.

I said earlier that certainly no one could be satisfied with the original form of this competitive examination, in which the child struggled laboriously with an essay, and fought more or less gallantly with half a dozen sums. These examinations were very unreliable, and there is no doubt that they encouraged teachers to cram and coach their pupils in school work, with baneful effects on the school curriculum. Yet improvements were on the way, even ten or fifteen years ago. Dr. Ballard, than whom there can have been few more competent to express the opinion, concluded in 1936 that the Special Place Examination would serve its purpose admirably if "new-form" tests of Intelligence, English, and Arithmetic were used in place of the original examination. These "new-form" tests are constructed on mental test, and not school exercise, lines, and each may contain from fifty to two hundred short questions. They are very reliable, but are still regarded with suspicion by those who, without examining the evidence, believe that they favour the quick but uncertain at the expense of the slow but sure. It is perhaps true, however, that success in them depends to some extent on *recognising* the right answers, rather than producing them for oneself out of the integrated store of one's knowledge and reasoning.

Tests of Intelligence have, of course, proved their value and reliability over and over again. The trouble is that the general pattern is known to teachers, who train their children to answer Intelligence Test questions much as they might train them for a race. This is apt to bring suspicion upon the fairness of the tests, especially as some schools faithfully refrain from surreptitious cramming and training of this kind. The mental-test constructor, of course, can retaliate with newer tests, and the day may come, perhaps, when his tests will be provided on a film, in technicolour, with sound effects, in an attempt to defeat the guile of these ambitious and jealous teachers! As we shall see later, however, intelligence testing is not quite the simple and straightforward matter it may seem to be; and I sometimes have every sympathy with those teachers who give their children a daily dose of Intelligence Test questions, on the ground that perhaps the brain, like a voice, can do with intensive practice at scales and exercises of the Intelligence Test kind to bring it to full tune!

As for aptitudes, the concept is peculiarly restricted to an *inclination*, a slight natural bent, so to speak, for one or other subject of the school curriculum. So the child is said to have an aptitude for learning foreign languages, or for mathematics, or for engineering, or for administration, or for gymnastics, or for practical subjects of the time-table. In the less humdrum fields of art and music the inclination is called, instead, a *talent*. The word "talented," of course, may also be applied to a person who is a brilliant mathematician, or who can learn a dozen languages at a time, or to any highly developed state of excellence in academic or other fields of human endeavour. It is well known that psychologists have not found it easy to be sure about the inclinations and aptitudes of young children; and it is difficult, even, for them to be sure about childhood talents. Some years ago, for example, a twenty-months baby was brought to me who could sing, on her mother's knee, almost any of the popular songs then current. She now sings no better, and no more in tune, than most eight-year-old girls. An aptitude is often coloured by passing interests: admiration of a teacher, for example, may produce quite a crop of pupils apparently with a decided aptitude for the subject taught by that teacher; and it is not unknown for girls to hate Mathematics so much that neither their teachers nor themselves can ever penetrate the dead-weight of resistance involved in this distaste. Yet the fact that we rarely talk about an aptitude for History or Geography suggests that somehow inherent qualities of mind are involved in an aptitude for Mathematics, or for Language Study and the like. I merely suggest, for the moment, words of caution. It is certain that talents such as Menuhin's are real enough; but so many influences are at work in the school that there is little evidence of genuine aptitudes in children as young as eleven years of age, and of those which are supposed to make their appearance nearer fifteen years of age, some are suspect for one reason or another. I shall have more to say of this later.

The Norwood Committee,* on the other hand, had no such doubts, and considered that children at eleven to thirteen fall naturally into three broad types, to suit Grammar, Technical, and Modern Schools respectively. This three-fold classification, its Report adds, has "established itself in general educational practice," and they are not distinguishable in terms of intelligence levels, but, rather, in terms of aptitudes. Children of the Modern School type, the Committee avers, "may have much ability," and along one line may outstrip their fellows in Grammar and Technical Schools. Pupils of the technical type may have either "moderate or unusual intelligence". The Grammar School type is not necessarily highly intelligent, but . . . "he can grasp arguments; follow a piece of connected reasoning . . . and take long views, holding his mind in suspense". There is some evidence that this Committee's conclusions are reasonably correct, up to a point. It is more than probable, however, that the supposed types owe a great deal to the early education of the children, rather than to any inherent qualities of the boys or girls concerned. A far larger proportion of boys from a good preparatory school, for example, fit the Norwood definition of a Grammar School type than can be warranted by any psychological examination of the boys. Nor is it difficult to show that other important factors make it impossible to justify selection on the basis of any such "types".

---

* The Norwood Report (H.M.S.O.).

Failing aptitude tests, the Ministry is of opinion that the maintenance of school records can provide evidence of the kind required for selecting children for this or that type of Secondary School, since the child's progress at school, his knowledge and interests, and information about his character and personality must surely be a pointer to its future. The child's aptitudes, particularly, should be apparent in a well-kept school record system, as Dr. Bowley suggests*; and, failing any immediate signs of special aptitudes, it can be left to the experienced teacher to guess whether the child is likely to develop later on. In any case a great deal of responsibility will rest on the judgment of teachers in any system of record keeping.

Preparatory Schools have long made use of progress reports of a simple, but effective, kind; in many cases a brief report is drawn up fortnightly about each child, who receives this himself, while the usual terminal report is provided for his parents. But for the onerous business of selecting children for a Grammar School in competition with scores of others, more would be needed than this. A sizing-up of each pupil would be necessary in general rather than in particular terms, and although educationists have experimented with various schemes already, they have been perhaps of too elaborate a nature for the purpose they have to serve. The Scottish Research Council in Education† took a wiser course and recommended a very simple form, on which could be drawn a child's *profile* for a few main qualities only, the principle being, in this case, that no quality should be added to the form unless it contributed significantly to the predictive value of the qualities which had already proved their worth. In the Council's research on *Selection for Secondary Schools*, for example, each child's "industry" was assessed as something probably worth taking into account; but a most thorough analysis proved that it added precisely nothing to the effectiveness of selection already reached by a few simple test results, and the assessment, consequently, was dropped.

As for the competence of teachers to make sound judgments about their charges, the evidence is conflicting: according to some who have studied the matter, a rough guess is about as good as a teacher's estimate of a child's ability or promise. Many teachers, moreover, thoroughly dislike having to make these judgments, and to " size up " their children, when so much depends upon it. Dispassionate regard and objective judgment are not the easiest qualities to display under these circumstances, and there can be sympathy for those teachers who agree that better and more searching tests of a child's worth and calibre, under the careful eye of the school psychologist, would save everybody trouble and be the sounder policy.

---

* A. H. Bowley, "A Study of the Factors Influencing the General Development of the Child during the Pre-School Years by Means of Record Forms," *B.J. Psych. Mon. Suppl.*, Vol. VIII.

† Wm. McClelland, *Selection for Secondary Education* (University of London Press, 1942).

Neither in the Ministry's suggestions nor in Reports such as that of the Norwood Committee is any mention made of the one solid fact known about children at eleven, namely, that their abilities are highly *general* in nature. The child who is good at one school subject tends to be good at the other subjects too, especially at this age, and the dullard makes a poor showing all round. The bright child not only shines at Arithmetic and English, but is well in the limelight, if required, in Handicrafts and Art. The result is, therefore, that if we prepare tests which seem to be suitable for measuring the native intelligence of these children, or just the thing for unearthing an aptitude or a special ability, they turn out to be indistinguishable in any objective terms—again, the child who does best at the Intelligence Test also fares excellently at the tests of aptitudes or of any special abilities. So much is this the case that tests made for one purpose can be used just as soundly for the other; it is easy to understand, therefore, why some psychologists wish to attribute facts of this kind to the function of a *general ability*.

The matter is profoundly disturbing for any who believe that psychologists are providing, in their Intelligence Tests, measurements of innate capacity, and of its maturation, freed from the influences of experience, education, and environment. The Ministry's objectives were clearly to select children for their innate or inherent gifts and promise, for consciences had been stirred, and it seemed no longer justifiable to fill the precious places in Grammar Schools with children whose claims to them rested on their better early schooling or upon the social status of their parents. Something of the equality of opportunity that I have instanced in the American scene was to be vouchsafed (so it was thought) for our children. Yet even these good intentions now appear to be based on incorrect premises, on an inadequate understanding of what is involved in the mental growth of a child, on a desire to put back a clock that can never be so accommodating.

Few, of course, would wish to deny that innate mental capacity is real and tangible enough. But any notion that this remains untouched and uninfluenced by environmental influences (even those in early infancy, and before the child is eleven) is out of touch with what we know about mental development. Innate capacity sets a limit to development, a check beyond which the child may not go; but where the early training has been adequate, and the mind properly nourished, foundations have been laid which cannot be separated from the higher edifices of intellectual power reached by the growing mind. So it becomes a fact that the child trained properly in English, or in Arithmetic (and not subject to cramming or to mere parrot-wise learning—by "properly" I mean learning with insight, and with the development of abstract and sustained thinking), becomes intellectually *able*, and his intelligence follows suit. It is impossible to offset that part of mental development, then, which is attributable to natural maturation of an innate capacity, against the part which has been nourished by experience. The two become the one, general, ability. This is the reason why our tests, for children at eleven, in effect measure such an ability developed up to that point in the maturing child, and not intelligence regarded as something freed from the effects of experience. It explains, too, why intelligence and "capacity for learning" are so intimately related.

Schooling, in short, matters; no native capacity runs unchanged, or merely matures through childhood and adolescence. The boy who is being properly educated in a good school is already, inexorably, adding to his mental stature; and the better the school and education, the higher the stage of integration that will be reached, subject only to limiting influences of the original capacity and to the outcropping in adolescence of special abilities: the clock can never be put back for this boy relative to others who have not been so fortunate.

A brief illustration may give point to this important matter. There has been some talk, recently, about "culture-free" Intelligence Tests, intended, clearly, to measure innate intelligence and its inherent maturation, free from the supposed contamination with race, education, or experience in home or school. The tests suggested for this purpose are derived from, and are essentially similar to, the G-tests referred to in a later chapter (p. 47ff): they are non-verbal Intelligence Tests, making use of small black figures, lines, or shapes. This type of test has been carefully studied for its connections with mental growth (e.g. by Dr. W. Line, in *The Growth of Visual Perception in Children*, Cambridge University Press, 1930), children being tested at three, four, five years of age, and so on up to adolescence. A distinct correspondence has been discovered between age and mental growth; the tests, in fact, measure general ability. This did not apply, however, in the case of some children, if differently coloured figures, lines or shapes were used in place of the black ones; these children were not colourblind, but were blocked and bewildered by the coloured tests. Now, we know that certain emotional factors are responsible for checks of this kind, and that these in turn are often related to environmental conditions and to lack of satisfaction in the "needs" described in Chapter I. Here in a nutshell is an example of the way in which environmental influences may disturb the orderly maturation of a child's mind, since the child *ought* to be able to do those coloured tests which are no more difficult, really, than the black ones. Examples in the other direction are available, too, showing how early education and background may nourish and ripen the child's mind, as we shall see more fully in the sequel in connection with the Test of Poetry-Writing (Chapter VI).

Here, then, is a pretty kettle of fish and a mass of difficulties for the Ministry's scheme of things. The discussion of "need-satisfactions" in the previous chapter, the process of mental growth, and the discovery that general ability and not special aptitudes characterise the child's mind at eleven, all suggest that even if we could test a child's innate capacity in a "culture-free" form, this would be no reason for discounting in any way the measurement of his general ability and the mental growth this reflects and represents—on the contrary, is not this the matter of the greatest interest to schools? We shall support the point more strongly in due course, when we examine the intimate connection between more general features of personality and the capacity to integrate and mature in terms of general ability. Yet in a thoroughly English fashion of muddling through to the right ends with the wrong reasons, selection in this country has in fact been based upon measurements of general ability, so that the deed has been by no means as unsound as all these various difficulties may suggest.

CHAPTER III

PERSONALITY AS A BASIS OF SELECTION

THERE is something alien and unpalatable about using the assessment of a child's personality as a basis of selection for Secondary Schools. The Fleming Committee* has proposed, however, that twenty-five per cent of the places in Public Schools should be filled by boys drawn from day schools, with bursaries from the State to support them there, and frankly said that it wanted children selected for character qualities and personality, for potentialities as "leaders," rather than for intellectual worth and promise alone. "If a school is to be a true community," it reported, "it must contain children of widely ranging intellectual qualities." This is roundly in line with the American notion of a school, but of course it is a considerable social privilege to attend a Public School in England, and the competition for bursaries would be more intense than it is for places in a Grammar School. Moreover, if a boy may not be selected for something tangible like his intellectual development, but must depend upon a Headmaster's opinions about so vague and evanescent a thing as his personality and leadership qualities, would we not prefer to see the bursaries given away by lot? This is far more in keeping with the spirit of these football-pool days, and seems more just than the Committee's suggestion that the bursaries might well suit boys from broken homes, or whose parents are divorced. Journalists at the time the Report was published indeed suggested that divorce might be the only certain way to get one's boy, in future, into a Public School.

We have to ask what will, in fact, be involved if personality is to be the basis of selection, for any school, or for any other purpose. It is usual to think that there are no valid tests of personality, but at least two or three very excellent ones are available: the difficulty is that they can only be applied and interpreted by psychologists who have specialised in their use, and whose wider experience is commensurate with the task they are tackling. One

---

* Fleming Report. (H.M.S.O.)

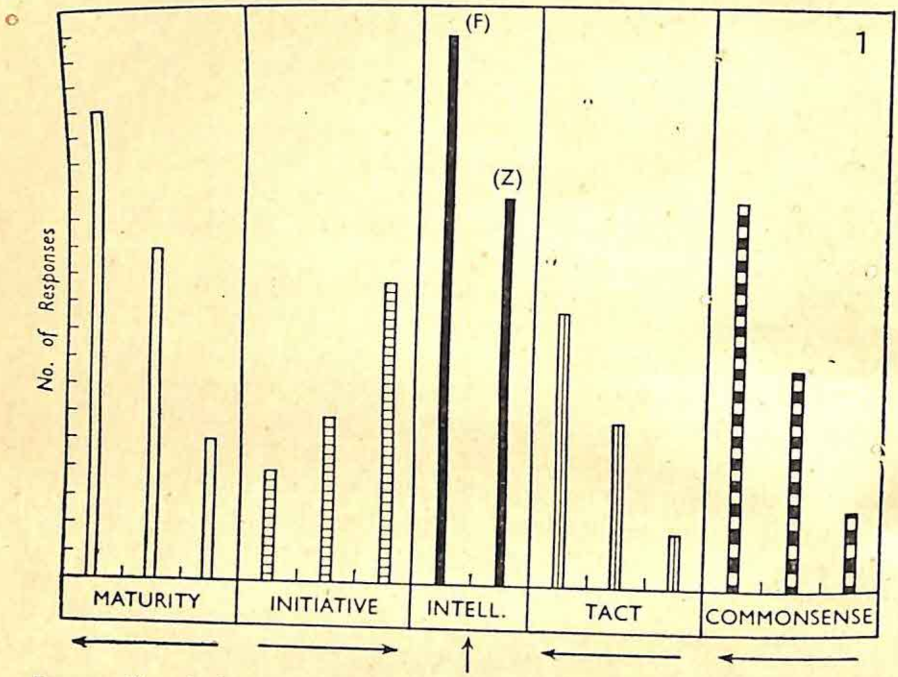


FIG. 3.—Rorschach response diagram for a well-balanced, mature personality. The arrows indicate the direction in which the responses should increase in frequency for greater "maturity," "initiative," "intelligence," etc. These terms provide only a very rough account of what is involved in each case. "Maturity" and "initiative" refer to the emotional endowment of the person, "tact" and "commonsense" to the person's spontaneity of action and reality-sense. High "F" points to intelligence and stability and "Z" to abstracting and generalising aspects of intelligence. (The frequency of "F" responses is actually much greater than is shown in the above diagram.)

such test is the Rorschach,* the rationale for which is to be found, very largely, in the principle of need satisfaction already referred to in Chapter I. Any child whose needs are being adequately gratified will have the right kind of personality as tested by this test; and if, in addition, he is intelligent enough, and has potentialities for development along intellectual or other comparable lines, he is twice blessed.

The Rorschach Test consists of a number of ink-blots, some black, and some coloured like the blot shown opposite page 80. The child looks at the blot and says what he sees there, much as he imagines things in the flames of a fire or in clouds. Each blot has form, texture, light and shade, and the like represented, to stimulate the child whose mind is alive to these things. But besides

---

* H. Rorschach, *Psychodiagnostik*.

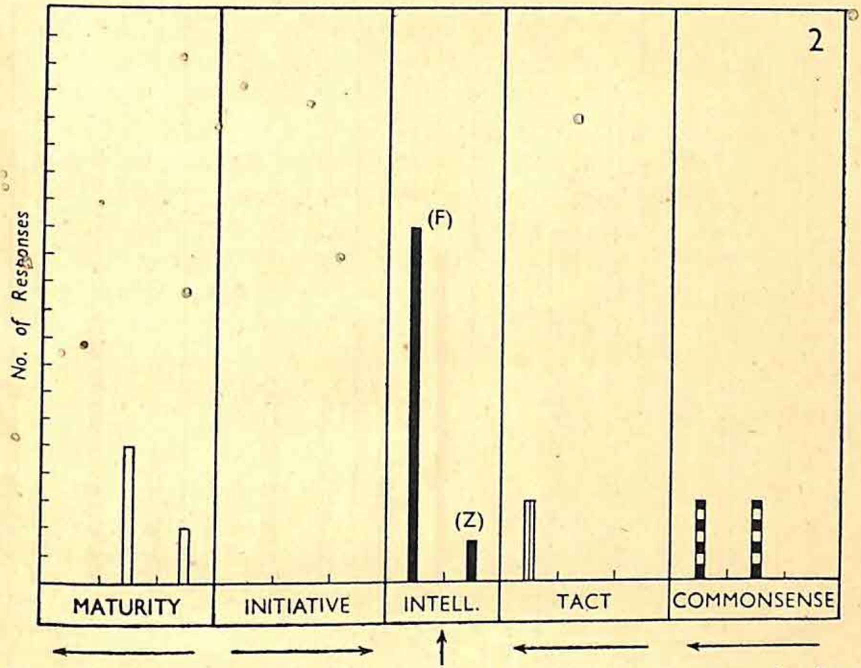


FIG. 4.—The response diagram for a very different personality—inert, colourless, unresponsive, yet stable in all its dullness.

being alive or not to these objective possibilities, the child may project on the blot some of its own phantasies, its anxieties, pleasures, interests. The blot, then, serves as a focusing-point for interplay between objective signs on the blot, and subjective projections of the child. The normally expressive child makes full and free use of the objective signs, whereas the neurotic projects far more, and to this extent gives a semblance of this same responsiveness. Although you may think that it is a test of imagination, it is in fact a test of the extent to which a person has the right kind of personality structure. I mean by this that each person, with certain potentialities for emotional expression, for taking an interest in the world of persons and things around him, should be free to express these potentialities richly, and without arbitrary constraints: he should be expressive of all his potentialities, and the test probes into these, and into the extent to which the person is free to give them a healthy expression.

An example will be helpful. Towards the end of the war I tested ten R.A.F. Air Cadets who had only recently left school,

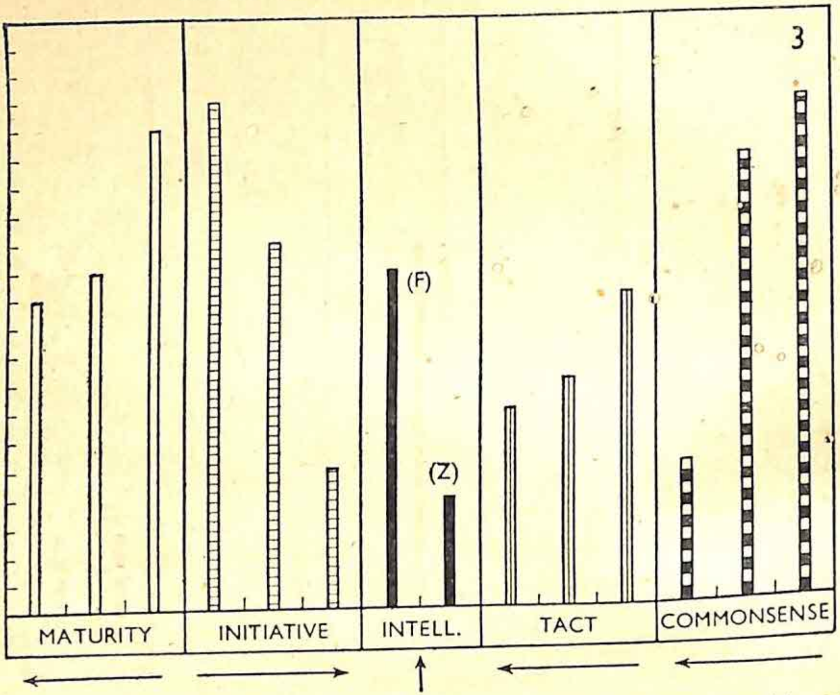


FIG. 5.—Response diagram of a highly neurotic person, impulsive, unstable, and generally "all on edge." Note that the frequencies for "maturity," "initiative," etc., are the reverse of those for the mature, well-balanced personality of Fig. 3.

and who had been the most successful candidates in some preliminary tests of aptitude for air training. They were eighteen or nineteen years of age; and the tests they had taken were similar to some described later—G, V, and K-tests (Chap. V), a test of Arithmetic, and the like. They were intelligent young men, nine from day schools, and one from a Public School. My interviews were directed to the question of their personality, and in seven of the nine Day Boys I must confess I could find very little sign of any. One exception had fashioned something, but it was warped, distorted, and twisted in nature. The Public Schoolboy was more solidly founded, although he was childish and immature for his age—for example, he spent his "leave" jotting down engine numbers on the G.W.R. at Paddington Station, counting as well the number of first- and third-class carriages, and their proportion to one another, on some pretext or other. I wondered how far the personality of the Day Boys was lacking in the first place, and how far the schools had merely failed to unfold it.

Had their scientific training warped them, for most had been science students, or were they constitutionally incapable of the warmer aspects of personality?

The Rorschach Test, which I gave them, and the interview, indicated that in seven of the ten cases the personality structures were inherently weak, and only two of the Day Boys, and the Public Schoolboy, were fashioned on better lines. Some of the ink-blots in the Rorschach Test are coloured: yet of these ten R.A.F. cadets only three made any use of colour in their responses—the blots might as well have been all black as far as they were concerned. And this is repeated in almost every feature of these blots. A bright red splash, as objective as a full moon, is ignored by children and by men and women in full possession of colour vision; a richly textured surface, as black as a top-hat, is passed with unseeing eyes; a swirling shape is there to be seen, but it appears as dead as a door-nail. These may seem small things but they are symptomatic of a gross insensitivity, a lack of emotional warmth and freedom to feel and be interested in things around us. The facts support the view of psychologists who have studied the matter, that there are widespread deficiencies in personality development, which are largely attributable to the unconscious dominance of parents and the unenlightened influence of teachers, and all this is reflected in our own harsh consciences or the compensations we make for them.

The Rorschach Test is a telling probe into the sufficiencies and insufficiencies of personalities, and precisely for the reason indicated in Chapter I. It can disclose the degree to which a child is well adjusted for its age, and well developed with regard to the gratification of the "needs" referred to in that chapter. Basic insecurity is shown in this test; constriction and inhibition, the consequences of lack of satisfactions in layers higher up in the scale of needs, are freely indicated in the test results; and whether the child is free to express his innate capacity in high-order integration and mental growth is particularly well shown by the test. As an example of the significance of this type of test the reader may like to test one or two of his friends for himself: choose in the first place somebody who is of quiet, moody, depressive, or pessimistic disposition, and another of the opposite description, who is usually in high spirits, cheerful, "the life of the party." Give them two minutes in which to write down what they can see in the ink-blot facing page 80, and if the two are of roughly equal age and intelligence level it will be surprising if the gay Lothario doesn't write down ten to fifteen ideas and the more pessimistic Malvolio only three or four.

But to return to the Headmaster who is faced with the duty of selecting children with potentialities for personality development: I thought it would be interesting to match my own views with those of a Headmaster, and chose for the purpose one whose judgment few would dispute. We both interviewed in our respective ways twenty boys, and we differed considerably in half the cases. Of course, both of us might have been wrong about these ten boys, but I could show, from test results, where I thought the Headmaster had made mistakes; and in each case he had to admit that there was a great deal in what I had to say. For example, one boy was regarded by my friend as "most promising of all," making altogether a good impression. He was from a good Preparatory School, appeared to be open and frank, of a lively disposition, and was considered to be very intelligent. My own view about him was very different. Everything indicated, tests and interviews alike, that he was extremely superficial, verbose and highly associative, haphazard and arbitrary in his ways of thinking. He was basically inflexible, impulsive, highly irritable; he gave the impression of being clever, and had plenty to say for himself, but he was essentially shallow, of average intelligence, and . . . verbose. This boy would take almost anyone in: as he grows he will no doubt develop a certain flair for wit, a taste for nice furniture, an ambition for most of the pleasantries of life. But he is essentially hysterical and already realises his superficiality; and he will have to bluff his way through life. In another case about whom we differed—he was a young baronet—I considered the boy to be bland, charmingly vague, although good-natured and even-tempered as a rule. He seemed to be a little slow, but palpable good-will and honesty shone from his face and attitudes. We agreed, the Headmaster and I, up to this point. But I found him to be altogether a colourless personality, almost apathetic. A serious weakness of intellect was apparent: he couldn't keep a train of thought going for long without losing sight of its connections. He had, in fact, very little ability, and his good-nature was a flat, bewildered sort of thing. In different circumstances he would have been regarded as a very dull, apathetic boy, and even now, at sixteen, he could scarcely add, and abstract thought was outside his range. I have no doubt that this boy would have been given a free place in a Public School, on grounds of his personality.

Admittedly these are perhaps exceptional cases. But something of the kind occurs wherever young people are selected by interview for their personalities. Serious misjudgments can be obviated, to some extent, from reports made about the boys by their previous schools: but the same boy is apt to mislead other teachers too. What is significant is the *average* extent of the misconceptions and errors of this kind, and one must conclude that assessments by untrained individuals, however wide their experience and fine their judgment, are likely to be seriously at fault in fifty per cent of the cases, for any group of children, or adults, that they are called upon to interview.

Upon what, then, is the reputation of Public Schools based, if, as I think it could be shown, nearly fifty per cent of their pupils are inherently weak in personality, both at the outset of their school careers, and at the end of them? The answer is that these schools produce fine characters, rather than expressive personalities.

Character and personality are not the same thing. Character can be fashioned in almost any boy, and it may restrict the development of a personality rather than unfold it. The curate may have much character, but little personality. The costermonger may have things the other way round. Character is concerned with conduct and the formation of ideals, personality with one's freedom to express inner needs and potentialities, for which character formation is only one of the channels of expression. Well-developed personalities, given the opportunity, can be fashioned into fine characters, but there are weak yet stable personalities, inhibited and constricted with respect to most human needs, who are nevertheless fully capable of character development.

It is not the place, here, to give an account of how character can be formed in young people: those who are interested can read this for themselves in Professor McDougall's books. It is reasonable to suppose, however, that character can be developed in almost any boy, and that no problems of selection are involved on this account. What the Public Schools have done is to discover how to develop it: and there is nothing necessarily exclusive to boarding schools in the method. Any day school can do as much for its pupils—the Headteacher has to learn what is meant by *sentiment* formation, and find ways to fashion appropriate sentiments in his charges.

> "We speak," writes McDougall, "of an emotion of anger, but a sentiment of hatred; of a wave of patriotic emotion . . . but a sentiment of patriotism or love of country . . . of a gust of tender emotion for a person, but a sentiment of love or affection or devotion to that person."

The Public School produces its harmony of character in boys by developing such sentiments in relation to the school and its tradition, to love of country and church; it grafts upon the common stock ideals and a sense of duty and service, and almost any psychologist could tell the teachers of a day school what to do to achieve the self-same character formation in its boys.

Personality, in our need-dependent sense, is of course also open to the conditioning influences of education and training. Perhaps I may be allowed to refer again to the ten R.A.F. cadets. One of these, living in the Lake District, had never, during his schooldays, been more than five or six miles away from his home, except to visit Blackpool and Morecambe in the holidays. This was symptomatic, I think, of the lack of background around him in his formative years. Cheap films took his interest, and ugly chapels gave him his emotional tones. He was one of the two Day Boys, nevertheless, with sparks of personality in their makeup; and I later watched him develop, out of all recognition, as an officer after as little as four months of training in a training unit. Beginning as a diffident, uninspired, awkward youth, in so short a time he became confident, dashing, with a firm sense of duty and firmly rooted loyalties. The metamorphosis was not merely incidental, or consequent upon the donning of an officer's uniform, but the result of a deliberate educative process, a daily fostering of character and leadership. It is not suggested, of course, that any very profound changes were effected by these means in the expressive personality structures of such a young man; he had the beginnings of it originally, a faint echo of what was possible all along, in other directions as well as in these of confidence, service, and social leadership.

A child's character, then, cannot be a basis for selection, for school, parents, church, and State are agencies for developing character, and almost any child is potentially as good as any other, for their purpose, except perhaps that the more able child will tend to have the more enduring character structures. With regard to personality a very different state of affairs exists, for already at eleven different children are potentially very different personalities. In this we are not concerned with the precise form taken by any personality as such, whether it characterises a Churchill, an Arthur Askey, a Montgomery, an Einstein, a bookmaker, or a bishop, but with the way a person is free to give expression to his inherent qualities, these being based on needs primarily, and having emotional forms of expression, but being in tune with mental growth and maturation all the time. The assessment of such potentialities is clearly an expert matter, requiring considerable diagnostic and clinical psychological skill, and must not be taken for granted as within the scope of a Headmaster's good sense. The truth is that we have to educate our teachers, and discover for them new methods of training and educating children, before it will be possible for them personally to select children fairly for their expressive personalities. They have to learn to distinguish between social leadership (which, of course, is one way of many along which a person can express himself freely) and personality in the more comprehensive sense of the Rorschach Test and the clinical psychologist. I have recently tested, for example, a small delicately-refined boy, who is highly sensitive, and gives the impression of being hesitant and uncertain of himself. He is brittle, so to speak, and choleric in temperament. But his highly-strung nature hides a keen mind; he is a sensitive, highly-developed boy, creative, receptive, enquiring, open-minded. He is not good at games, nor physically robust: but heaven forbid that any of us, in a quest for personality with a social flavour and physical leadership, overlooks the treasures and promise of this fragile but properly developing child, who, when he is a man, will do more by persuasion and brilliance than a hundred others could hope to do by their hearty good-will and boisterous sociability.

CHAPTER IV

GENERAL ABILITY AS A BASIS OF SELECTION

It should be clear from what I have said already that this is an important concept, linked, as it is, to the broader environmental aspect of mental development. In everyday usage we mean, by general ability, more than intelligence alone: an able child is highly educable, does well at most school subjects, and is characterised by zeal and the ability to work hard. Nearly a hundred years ago Sir Francis Galton made this same distinction.

Now, I have not denied that some children, or grown-ups, may be intelligent but not able. Every College at Oxford, for example, has at times an undergraduate who is mentally a little queer or withdrawn and who lacks initiative and the will to aspire and achieve, and yet whose intelligence is brilliant enough. Intelligence Tests are child's play to him; but a coherent essay is a pathetic impossibility. Teachers must have observed the same empty intelligence of young people who are unable to come to grips with schooling and to penetrate below the surface of learning, and whose memory soon fades. It should be easy, it would seem, to distinguish these from their more able fellows, and it is certainly possible to do this for sixteen-year-olds. But at eleven, if tests of Intelligence, English, Arithmetic, and the like are set for children of a similar social background, the child who does well at one of these is successful to a similar extent in the others, too, and the poor pupil is weak all round. As I inferred earlier, a soundly constructed test of English at this age can be as fair a test of intelligence as almost any Intelligence Test itself. Preparatory schoolmasters tell me that this is not the impression they gain about their children at this age, and that some are already showing unmistakable signs of special aptitudes, a matter that I shall consider in Chapter V.

Meanwhile, some of the facts about this concept of general ability are worth attention. Most teachers must have heard of Professor C. Spearman's work on the *factorial analysis* of mental tests, and of his theory about a *general factor* called "*g*," which, to put it popularly, is found to run through all tests of intelligence, whatever their value, and in all tests in which intellect and reasoning have some sway. Tests of Arithmetic and English, for example, involve this same g-factor: indeed, in objective terms, at eleven, they involve very little else but this factor. Different tests are differently saturated with g-factor; long tests of intelligence, for example, are more heavily weighted with it than short ones. For technical purposes the total factor content of any tests is set at 1·00 and is written in the form of an equation, much as is done for the chemical composition of a compound. Thus the equation for most tests of ability for children at ten is $g^2 + e^2 = 1{\cdot}00$, where g is the g-factor saturation, and e the error of measurement or other factor in the test. In addition to a major factor like g, any test may involve a specific factor, s, in which case the equation is: $g^2 + s^2 + e^2 = 1{\cdot}00$.* The pre-war Special Place Examinations were almost wholly covered by this g-factor, but the papers (in Intelligence, Arithmetic, and English) had g-saturations of the order 0·80 only, compared with values as high as 0·95 for present-day "new-form" tests in these same subjects, thus confirming the early guess by Dr. Ballard fifteen year ago. In what follows it is instructive to keep in mind this brief introduction to the factorial treatment of mental tests.

Perhaps the most important study of mental tests from the educational selection standpoint, and certainly one of the most extensive ever made, is the Scottish enquiry (*Selection for Secondary Education*, McClelland, 1942) to which I have already referred. In this study over two thousand eleven-year-olds were tested or assessed to determine which were most worth sending to what were then called Secondary (but now, Grammar) Schools, and to find out which of the tests or estimates were best for the purpose. Each child took the following tests, or was assessed for the relevant quality:

---

* Factor representation of this kind is at least useful. Commercial tests, for example, should not be sold without their factor formulæ attached, for these factors give the tests their intrinsic value, for prediction and all else. The *reliability* of a test depends upon factors like g and s; the *unreliability* is shown by e. The reliability coefficient of a test, therefore, doesn't tell us whether it is for factors like g, or others like s, that the test is in fact reliable. Again, the error factor in a test can be reduced by making a test longer and longer; in so doing the saturation for factors like g and s increases, but whether for g or for s we have to determine by experiment. A short intelligence test may have g-saturation 0·80, s-factor 0·50, and error 0·33; a much longer form of the same test may have g-saturation 0·70, and s-factor 0·70, with negligible error. (*Saturation* is the technical word used to describe the relative 'amount' of each factor in a test, as shown by the factorial analysis.)

7600

Q—a qualifying examination in English and Arithmetic, similar to the old Special Place Examinations. The English papers included Dictation and Spelling, Composition, and a general paper; written and mental arithmetic papers comprised the remainder of this group, the whole taking 2¾ hours of testing time.

S—two standardised "new-form" scholastic tests in English and Arithmetic. (70 minutes.) These call upon the child to answer brief questions on these subjects, as distinct from the school exercise type of question involved in the qualifying examination Q.

T—an estimate by teachers of the child's ability in Arithmetic and English.

F—a forecast by teachers of the child's probable success after three years in a Secondary School.

I—a verbal Intelligence Test, of the *Moray House* series, provided by Professor G. H. Thomson's department at Edinburgh University. (55 minutes.)

The results of these tests were compared, in due course, with the success achieved by the children (or such as passed the qualifying examination) in the Grammar Schools *three* and *five* years later. Treatment of the correlation and reliability coefficients for these five variables shows that all measure the same factor, the *g* of the intelligence test, and that Q, S, T, and even F were separately as highly saturated with *g*-factor as the Intelligence Test itself: the general ability of the children embraces all. One just has to run one's eye down a list of marks for eleven-year-olds, for any tests or assessments of this kind, to see how closely these correspond, mark for mark, for any particular child, and the more reliable the testing, the more eager and well trained the children, the more is this the case—as can be seen by comparing lists from a backward with those from a progressive education authority.

The best prediction for success in the Secondary School turned out to be a combination of Q, T, and I. The addition to these of the marks gained in S made prediction rather worse, and not better: S and Q are too much like one another for one to contribute anything fresh to prediction that the other hasn't already taken care of, an illustration of an important conclusion that is often overlooked, that little is gained by extra tests, or by testing children more and more, unless the tests are sufficiently different from one another. They all measure *g*-factor; but it seems that different aspects of a child's general ability should be probed in order to ensure high predictive value for the tests.* There can be little doubt that this experiment, like others before it, suggests that what is being measured is the overall mental growth of the children, and that the facts support the viewpoint expressed in the previous chapter, that at eleven years of age differences in achievement are indicative of general mental ability, and that Intelligence Tests cannot serve to reduce differences in experience to a minimum. We measure ability every time, by every test, regardless of any particular way in which it has developed up to that point.

Other results from this Scottish experiment are important too. Out of every one hundred children sent to Grammar Schools as a result of scores on the battery (Q + I + T), with careful consideration of borderline cases and allowances for "flops" in parts of the examination, the choice was correct in seventy cases only. The other thirty failed, and ought not to have been sent to the Grammar School; and there would be thirty who failed on the tests originally, but who could have succeeded in the Grammar School. In short, thirty per cent wrong awards and thirty per cent wrong refusals is the magnitude of the mistakes made, relative to every one hundred awards. Figures for Q, I, or S alone were fifty per cent wrong awards and fifty per cent wrong refusals, relative to each one hundred awards, and afford a sharp reminder of the injustice of these methods, even the best yet experimented upon. Allowances for poor health, good home conditions, the child's progress and industry at school, and teacher's forecasts make no appreciable difference to these figures.

In order to predict with the order of success reached by the Scottish workers—and theirs is surely the minimum if it is not the maximum we may hope to achieve—any rejection of English and Arithmetic papers as components of a battery of tests for eleven-year-olds sets the task of providing two *other* measures or estimates, in addition to an Intelligence Test, each as highly saturated with *g*-factor as the tests used in the Scottish enquiry, yet each sufficiently unlike one another and Intelligence Tests to add effectively to prediction. Two additional verbal Intelligence Tests would not suffice for this—they would add to the reliability with which this is measured, but not necessarily to the predictive value of any pool of marks.

---

* On theoretical grounds this is the kind of evidence that lends support to Professor Thomson's views about the nature of abilities, rather than Professor Spearman's: in any case, in practice, there is an optimum for any type of test as far as prediction is concerned beyond which nothing is gained and much might be lost by making it more and more reliable. It is often felt that it is unfair to test children for selection purposes on one day only, when a child may be "off-colour"; yet little is gained by giving three days over to testing if the tests used are too much alike.

With sixty per cent misfitting for every one hundred awards, and this the best result so far achieved, what is wrong? Are children so incalculable? Was all well with the seventy successes? From the odium to which Intelligence Tests and school examinations alike have been subject in recent years it would seem that, far from picking out the really able children they guarantee at most that the persevering, the dull, the smart but hollow minds are selected. But whilst selection may place children reasonably well on the appropriate education ladders, the maintenance and development of high levels of aspiration in the children is a matter for the home and the school, and if the children chosen by techniques of the above kind were really inadequate, perhaps the schools themselves are not making proper use of the material provided for them. It is hard to believe that amongst the seventy correctly chosen there are not some, and those the best, well qualified for Galton's old description of "natural" ability:

> "By natural ability," he writes, "I mean those qualities of intellect and disposition which urge and qualify a man to perform acts that lead to reputation. I do not mean capacity without zeal, nor zeal without capacity, nor even a combination of both without an adequate power of doing a great deal of laborious work. But I mean a nature, which, when left to itself, will, urged by an inherent stimulus, climb the path that leads to eminence."

We have little to go on as far as the schools are concerned, except that I believe there is a wit and a clearness of thinking in boys attending a good Preparatory Day School, which is formed by the school, and which is altogether absent from the no less innately intelligent children of the Primary Schools: it is not difficult to test this, by using, for example, the Rorschach Test, and my own incidental testing shows that it is difficult to find in Primary Schools children whose capacities, as shown by this Test, are as highly developed as those of many boys in the Preparatory Schools. As we shall see, later, other facts support this general observation.

Again it might well be nearly impossible to reduce the apparent wastage represented by the sixty misfits in comparison with the seventy relative successes. In that case, except for the cream of the boys, the rigmarole of selection is surely unedifying, and unfair to a very large number of children: the view would be strengthened, in that case, for doing away with this canalising of young people at the early age of ten or eleven, and for the rapid introduction of schools of the multilateral type. But if something can be done to reduce the misfitting under existing conditions it is an urgent matter to set about it now. Attention to the wider personality qualities of the children doesn't hold much immediate promise; but perhaps some finer points from Intelligence Tests may provide at least a hint of where to press for improvements.

As age increases, and particularly by the time the young person is seventeen or eighteen years old, special abilities are much more in evidence and general ability becomes only part of the picture. It is then no longer true that tests of English and Arithmetic, or different kinds of Intelligence Tests, involve *g*-factor primarily or solely. And it will be no surprise to those who have followed the role of mental growth in the development of general ability to find that it is principally in special types of Intelligence Tests that we have the clearest evidence for special abilities.

CHAPTER V

INTELLIGENCE TESTS

I AM sometimes asked by curious Fellows here in Oxford whether I believe in Intelligence Tests, much as if I believed in the devil. I do, of course, consider that Intelligence Tests can be useful, but from what I have said already it is apparent that they are not quite what many have imagined them to be. The ordinary notion is that intelligence is an innate power, transmitted from father to son according to some or other principles of heredity; and intelligence tests are supposed to measure this innate and transmittable quality of mind. We owe this doctrine, in its modern guise, largely to the writings of Sir Francis Galton (1822–1911). Yet even as Galton was founding the science of individual differences there were others around him pointing to the flux-like nature of organic life. H. Spencer, for example, in his *Principles of Psychology*, reminded psychologists (he was not one himself) that "the life of every organism is a continuous adaptation of its inner actions to outer actions"; and we saw in the previous chapter something of the kind in the mental growth of a child, which is spurred by innate capacity, no doubt, but is also nourished inexorably by the interbehaviour between the child and its environmental, especially social, influences. Intelligence is not a kind of fruit which, picked green, ripens in the loft. It is, instead, a malleable organic growth, subject to inhibitory influences, disturbed by emotional distress, and held, at any moment, at a particular level of aspiration and tone. As we saw, when children are tested whose social and educational backgrounds are similar, tests of English and of Arithmetic, based on widely disseminated knowledge and not on any narrow specialisation of these subjects, measure intelligence as soundly as any ordinary Intelligence Test does; and this is not because *plus ça change, plus c'est la même intelligence*, but because mental growth and general ability are critically involved in these apparently different tests, including some forms of Intelligence Tests themselves.

But we now distinguish between different types of Intelligence Tests on functional and not merely on nominal grounds. Thus a number of tests can be made in which the thinking has to be done about *pictures*, printed in the test for everyone to see. For cataloguing purposes all might be called "pictorial" tests of intelligence: yet one test will measure general intelligence, another "psychological" ability, twin to what is sometimes called "social" intelligence, and still another might be highly verbal in significance and measure "verbal" intelligence instead. It is the purpose of factorial analysis (see Chapter IV) to discover these functional differences between apparently similar tests, such as I have called "general," "psychological," or "verbal."

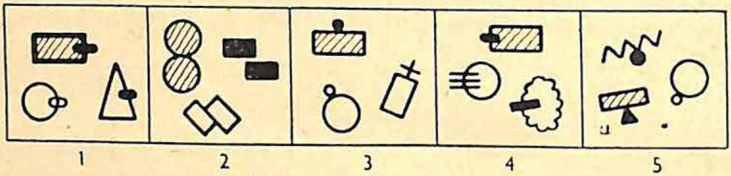
It was functionally different types of tests that were used, for example, for selection purposes in the R.A.F., and W.A.A.F., during the war: three in particular were of interest, called G-, V-, and K-tests respectively. Figures 1 to 6 give some idea of the kind of questions in the G-tests: they are composed of lines, shapes, and figures, set as problems in the form of *classification*, *analogy*, *series*, *rhythm*, and similar schemes. Thus Figure 6 is an important type of classification scheme, from which some of the soundest G-tests are constructed. The *series* principle enters into the well-known *Matrix Tests* of Penrose and Raven (see Figure 3 for questions in this scheme); and *rhythm* was used extensively by Dr. M. Fortes, the anthropologist, in tests he made and applied to African natives. Tests of the G-type seem to tap, especially, a probing or analytical attitude or form of intelligence.

V-tests, on the other hand, give an advantage to those who read a lot, who are educated in the classics, or who are apt in the use of words, and who have developed a high-order, abstract, synthetic form of intelligence. It was Wm. James who distinguished between the poet who "obeyed" metaphors, and the scientist who "noticed" analogies: the essence of the verbal intelligence which these V-tests measure, is the spontaneous growth of metaphors, as distinct from the alert probing which is so characteristic of the analytical thinking in G-tests. In the Poetry-writing Test to be described later it is very striking to observe how the verbally-minded child produces lines of poetry of tolerable pertinency, if not beauty, in a matter of seconds, with an easy grace—an obedience to natural impulses, as James saw it; his more scientifically minded brother may spend twenty minutes at the same test without writing a word, not bursting

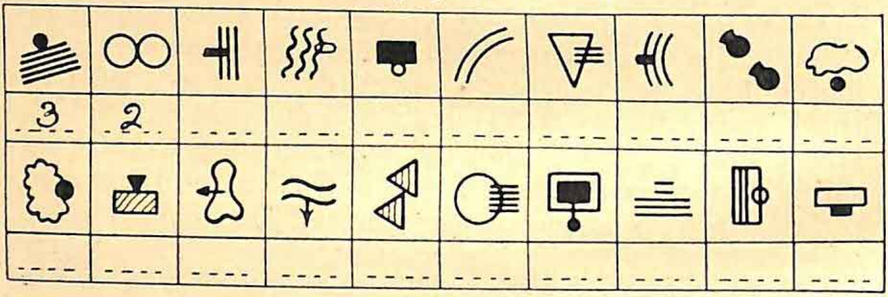
G-TESTS

(1)

The three drawings in each of the squares marked 1 to 5 are alike in a certain way. Find how each three in a square are alike. Thus, those in the first box are all alike because they have little pieces pointing to the right.



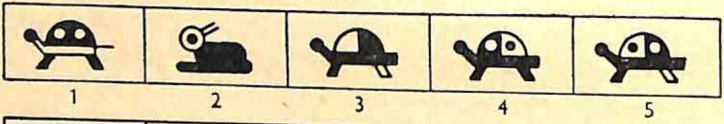
Now find to which square each of the following drawings belongs, and write its number underneath. The first two have been done for you. Do the others:



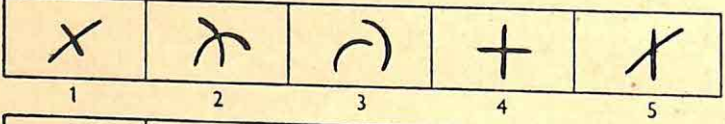
(2)

Find the "ODD" drawing in each row.

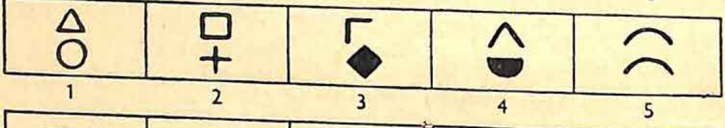
Write its number here:



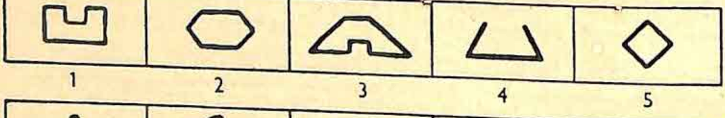
No.........



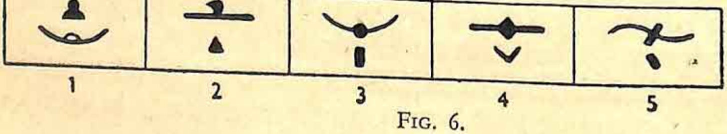
No.........



No.........



No.........

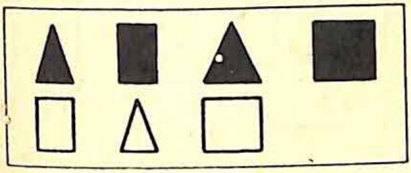


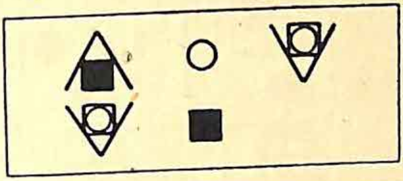
No.........

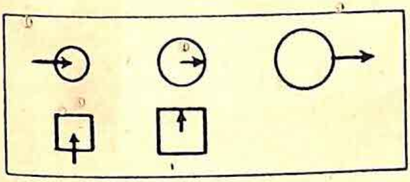
FIG. 6.

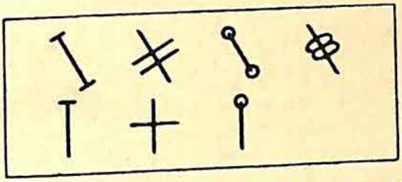
(3)

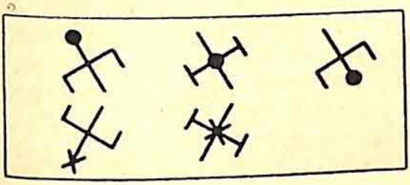
Draw in the missing part in each of the following:

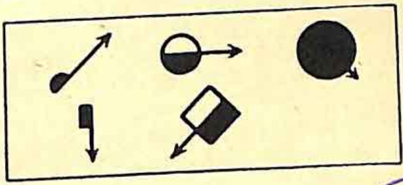












(4)

In each question 1–5, arrange the drawings under "2" so that they have the same order as those under "1." The first question has been done for you already.

SENIOR BASIC TRAINING BANIPUR

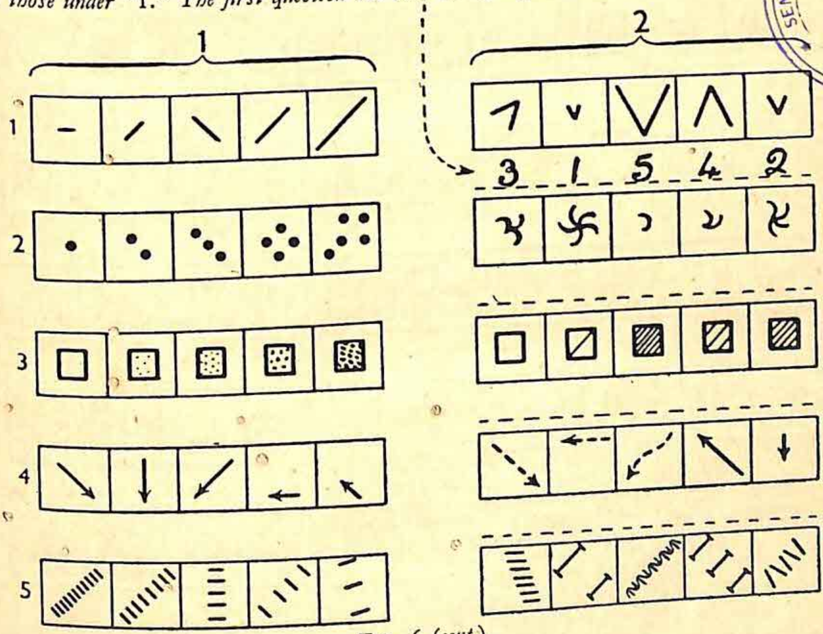
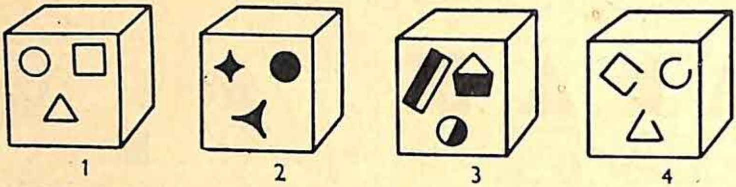
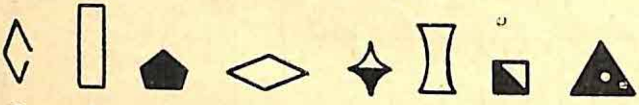


FIG. 6 (*cont.*).

(5)



Into which box would you put each of these (1, 2, 3 or 4?):



Write the numbers here: 4 1

(6)

In each question 1–5 the three drawings under "1" are alike in some way. Those under "2" are also alike in some way. Look at the four drawings at the right.

Put a "1" under any like those under "1."
Put a "2" under any like those under "2."
Put a "X" under any that is like neither "1" nor "2."

The first question is done for you.

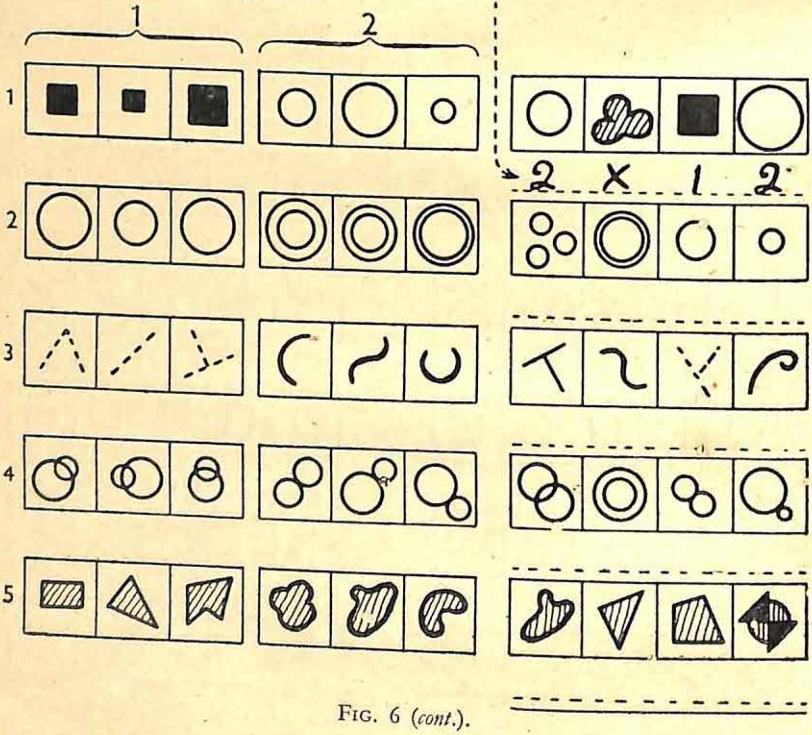


FIG. 6 (*cont.*).

into song at all. In the former case the child does not seem to think explicitly about it: the lines burst in a single impulse, with surprising immediacy. In the other case there is a ponderous, explicit, slow-moving, logical thinking about the requirements, with many ideas, but a groping after words to clothe them. No sooner are verbal Intelligence Tests made which force the individual to think explicitly, than they become more G-test in type and less V-tests.

G-tests are most characteristically those in which explicit trial-and-error manœuvring, the explicit trying out of hypotheses, the checking and cross-checking of relations take place, and where formal, scientific, and logical thinking is involved. Of course not all V- and G-tests are obviously different in implicit and explicit respects: but the best V-tests are associated with implicit abstract thinking, and the best G-tests with explicit analysis, whether the test-units are verbal, non-verbal, numerical, or any others.

Similar considerations apply to K-tests, which include tests of mechanical aptitude, performance tests, and practical Intelligence Tests. But in purest form they sample the implicit and skilful grasp of shape and spatial relations, rather than the tortuous groping after the required relations by analytical processes. Thus, high K-ability is shown by the child who can draw a capital letter R as it would appear reflected in a pool of water, without having to think explicitly about it. Carpenters and engineers do well at K-tests, as do practical-minded children.

The same applies to S-tests. These can be composed, for example, of comic picture-postcards, or of "cuts" from any British or American film; the questions may be of the kind—"Who, in this picture, is casting grave suspicion upon whom?" These tests differ from G-tests, not because they are composed of pictures, but because they deal with the relations between people, with subtle tilts of a head or poised hand, with the cross-currents connecting a group of gossips, and with all that concerns the conduct, manners, customs, and the psychological behaviour of individuals and groups; they differ also because they do not favour an analytical attitude of mind, but give an advantage to those who have developed a skilful form of thinking in relation to social material of this kind.

It might have been more interesting for the reader if I had dealt more fully with these various functional types of Intelligence Tests: but that must be for another occasion. Meanwhile, that these depend at least in part upon environmental influences is obvious. The types are discovered by the methods of *factorial analysis* referred to in the previous chapter. Thus, G-tests mainly involve the factor g (together with specifics and errors); V-tests have g and another factor v; K-tests have g and a factor k; S-tests, g, v, and still another factor x. All, we observe, involve the factor g. The equation for a V-test, like that for general ability (see page 41), is as follows:

$$g^2 + v^2 + s^2 + e^2 = 1{\cdot}00$$ (when s and e are specifics and error respectively)

The more a test measures g, therefore, the less can it be loaded with v; but it doesn't necessarily follow that the V-test which is highest in v-saturation is the one best for measuring "abstract" intelligence.

When we test children at ten or eleven years of age, the g-factor content of V-tests is about seven times as large as their v; at fifteen the proportions are nearly equal. An important fact about V-tests, and v-factor, is their breadth. The factor v enters into tests which are as widely different as Poetry-writing and Cancelling T's on a page of print; every operation of the mind which involves the use of language seems to have v in its wake, suggesting a function of considerable generality. A sex difference is identifiable, too; girls and women fare better at V-tests, on the average, than boys and men. It is well enough known that women are more verbose than men; and girls seem to be more uncritically vocal in verse than boys, and perhaps more apt at learning foreign languages. In any case, beginning as a trace in all kinds of verbal tests at ten or eleven, this v-factor grows with age, and indicates a very broad aptitude which is diagnostic for a variety of significant scholastic gifts and vocational trends. It is hard to believe that writers, poets, and the literary-minded in general can be without heavy dosages of v. But the factor is also of wider significance—men in the clerical profession, men who work in London's insurance offices, or who sell you your railway tickets, or who become Members of Parliament, tend to do better at V-tests than at G-tests. This doesn't necessarily mean that thinkers of a more abstract turn of mind are involved: mere verbosity, or even effeminacy, is just as likely.*

---

* Any of these classes of tests, whether G, V, K, or the rest, can be further distilled and refined. Thus, by narrowing the kind of questions, so as to force the mind along narrower grooves, minor offshoots from v can be distinguished, such as f (for fluency of ideas), r

EXAMPLES OF V-TEST QUESTIONS

(1)

Here are some pairs of jumbled letters: if the pair contain EXACTLY *the same letters, write an* "**S**" *on the dotted line between them, if they are not exactly the same, write* "**D.**" *The first has been done for you; now do the others.*

wtstyz ....**S**.... wtstyz
ertuyio .... ertvyio
mvzgfds .... mvzgfds
xagpljkbc .... xagpljkbc
ztbtfkiqrk .... ztblfkiqrl
sdmnvctkht .... sdmnvcthbt
fdgaslkxzpt .... fdgaslkxzpt
zaqhdpmlkrutn .... zaqhdpmdkrutm

(2)

UNDERLINE *the one word of the five words at the right which best completes the sentence:*

Example—

Book is to Paper as Scissors is to . . . . pair cut steel needle sharp
Body is to Mouth as Castle is to . . . . street town fort gateway square
Shark is to Fish as Terrier is to . . . . salmon dog kennel cat puppy
Ripple is to Wave as Breeze is to . . . . water cloud draught wind sea
Astronomy is to Stars as Geology is to . skies rocks trees geometry soap
Friend is to Foe as Friendship is to . . enmity peace country war clasp

(3)

Read the following, and then answer the questions about it.

In Xmas lanes
The snow is falling:
Swirled off the leaden panes
The gusts go brawling;

And, in the moonlight,
Glistening, show . . . . .

(*a*) What is meant here by a 'Xmas lane'?

....

(*b*) Write down the two words that describe the *wind* in this poem:

....

(*c*) Underline ONE of the words below that best describes the evening referred to in the above poem:

raging serene shimmering tranquil blizzard

What I have said about V-tests applies also to the other types. In the case of K-tests, for example, there are only traces of *k*-factor at ten or eleven, but at eighteen not only is the factor prominent, but a sex difference, which in this case favours the male, is the largest yet discovered in mental testing. Women find K-tests inordinately difficult, yet they are, in fact, rather easy tests to do.

In general, then, these special factors, and therefore the functional types of intelligence, appear only as traces at ten or eleven years of age, and only become obvious or dominant at eighteen or so; and they all look as though they are rooted in *aptitudes*. The special factors, and the aptitudes (or functional intelligences) they represent, are clearly enough in evidence amongst undergraduates, some of whom have perhaps only one outstanding gift—for Languages perhaps (with *v*-factor and its offshoots), or Mathematics (with increasing particularity in *g*-factor), or Music; others are able in an all-round way, with nothing to characterise them in the form of aptitudes; a few are more richly promising, and seem, like the Duke in Sir Max Beerbohm's novel, *Zuleika Dobson*, to be so gifted at everything that it is difficult to know where their general ability ends and their many aptitudes begin.

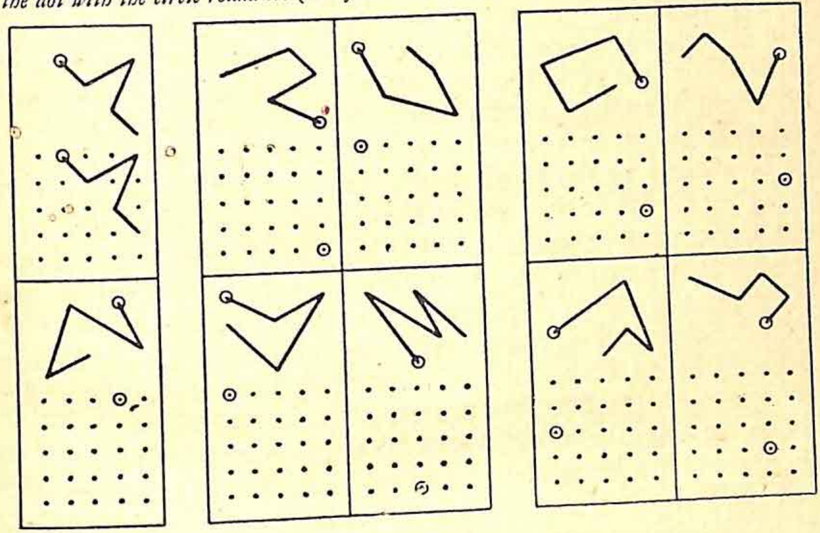
Yet at six years of age children seem to be very different in the aptness with which they learn to read, and the ease with which they learn their numbers, and already some are more practical-minded, in drawing, modelling, and the like, than their fellows. But these, apparently, are differences in rate of development, rather than early signs of future aptitudes, for by the time the children are ten or eleven a levelling-out process has been at work, and it is then difficult to distinguish clear-cut aptitudes at all. As we saw, general ability swamps all else at this age. But it is also possible that our mass educational methods—forty children in a class—have ironed out any budding differences that should, with encouragement, have grown into aptitudes, and I can well imagine that individual attention to the initial indications of special bents at six could breed a generation of children whose aptitudes at eleven would be more clearly in evidence, and this without over-specialisation, and without

(for richness of vocabulary), *h* (for reasoning power), *ae* (for quality of poetry writing), and so forth. These small factors are never found apart from *v*, any more than apart from *g*, and their amounts are rarely as high as one-tenth the *g* and *v* content of tests.

K-TESTS

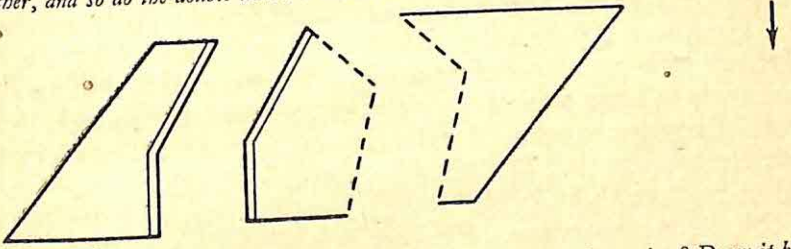
(1)

Copy each of the following shapes exactly on the dotted space underneath it, beginning at the dot with the circle round it. (The first one is done for you):



(2)

The following three pieces can fit together to make one large piece. The dotted lines fit together, and so do the double lines. What is the shape of the large piece? Draw it here:



If these three pieces are fitted together, what is the shape of the large piece? Draw it here:

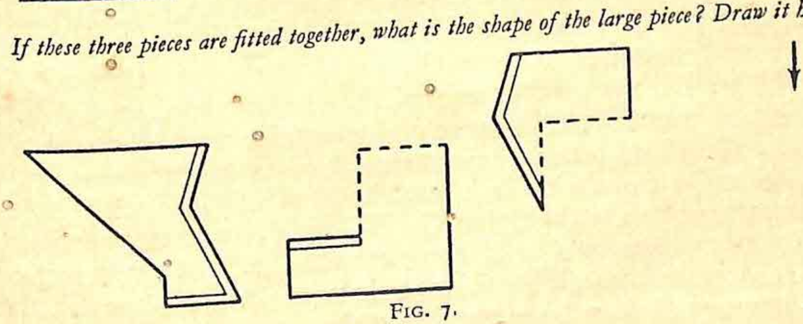


FIG. 7.

harmful effects on the more general development of the children.

We can now return to the problem of selecting children for Secondary Schools. A certain relativistic use of G-, V-, and K-tests makes it theoretically possible to distinguish the children who are likely to profit most from Grammar, Technical, and Modern Schools respectively. G-tests, as we saw, measure the child's analytical intelligence, but whether the child has potentially a sound analytical mind depends on his abstract intelligence as well; in short, he must fare well on both V-tests and G-tests. Again, V-tests probe particularly into abstract forms of intelligence, but whether they evoke this, or an empty verbosity for a child, depends upon whether it has high *g* or not. K-tests provide some evidence for technical-mindedness and practical ability, but again it is the results relative to results on G- and V-tests which decide matters: a child with high ability on G- and V-tests and medium on K- would be essentially less practical-minded than one with medium scores on all three tests.

Thus, in terms of Intelligence Tests, potentiality for a Grammar School should be shown in two main forms. Children who are of high ability on all three types of tests G, V, and K should tend to gravitate to science; those high in G, V, and probably in S-tests, to arts instead. Technical schools, as well, should draw on the whole on two main types, those apt on V-tests but not on others, and those apt on G and K but not on others. The commercial side takes the former, where *v*-ability is not balanced by a corresponding analytical type of intelligence: the prognosis is for a verbal-minded, impractical, rather effeminate lover of routine work and sedentary occupations. The technical side, for engineering and the like, draws on children high in K and G relative to V.

These statements are, of course, subject to many limitations. Scores on standardised tests for G, V, or K are *statistical guesses*, and not a guarantee that any child with the right scores will in fact be apt for the kind of school they indicate on the whole—all that is certain is that more children with the right aptitude will be found with these scores than any others. The tests provide samples only, rich in the right kind of children. It must not be forgotten, either, that G-, V-, and K-tests are very little differentiated for ten- or eleven-year-olds, so that any selection of children in terms of a relativistic use of their scores at this age is more a pious hope than anything tangible.

It has been held that the factor *g* represents, in *factor* terms, *general ability*; and as G-tests involve *g*-factor very largely, it is tempting to regard these tests as the tests of general ability *par excellence*. This is not the case. High general ability is shown, for any individual, by high scores in all functional tests of the G, V, K kind; a special ability or aptitude emerges, rather, for one test against a background of weaker scores in other tests. It is this relativistic use of the test results, rather than any particular regard of any *factor* as such, that gives meaning to our scores in terms of aptitudes or special abilities; and the discovery raises many interesting problems. Again, that a child has high general ability at eleven is no guarantee that special abilities will make their appearance at sixteen or eighteen, and it may be that success in a Grammar School or in the University, as in life, depends as much upon these as upon general ability itself. Before the war I examined a fairly large number of graduates and undergraduates at Oxford to see how far their success or failure depended upon general ability, or upon special aptitudes, and I decided that in some cases it was the one, and in others, the other. Each student was interviewed, his intelligences were tested, and his personality was assessed by a Rorschach Test. One student had just gained a "First," I felt, in terms of his general ability, with no outstanding aptitudes anywhere apparent—he was sound all round, but in a colourless way, and admitted that he had no particular gifts or inclinations. Another was very differently constituted; he had so many special abilities and aptitudes that it was difficult to see where these left off and his general ability began. He was charming, a brilliant violinist, a clever young engineer (it was in the family), and although he was reading in the Honour School of Mathematics he could as easily have taken French, Physics, or English Literature, for all of which he had more than a mere *penchant*. An outstanding case was a woman who, to my own knowledge, had been top of the scholarship list in her county and gave great early promise: she studied chemistry, but the waxing of this interest and ability seemed to correspond with a serious waning of her other abilities. It may be that an inevitable process of exclusion occurs, as in this science student who gained in intensity of analytical power what she lost in earlier literary promise; she could not be both scientist and poet, although she might have been either originally. Again, another, who gained very high marks in G, V, and K, managed only a "Third" in her degree in Geography, whereas many with much poorer G and K scores, and no better V, gained "Second" or even "First" class degrees in English Literature and Modern Languages. It is difficult to compare the standard of these various degrees; but the Geography student admitted to no special aptitude or interest except broadly in a scientific direction (but without any gift for mathematics, or interest in physics, or biology, etc.), and Geography seemed the least exacting in the way of special ability, or so this student thought, whence her choice of it as the subject of her degree. Yet she, too, was a State scholar.

Obviously, how a set of abilities will find their level or significance in life is a matter of great complexity, and difficult to disentangle. I doubt, for example, whether a psychologist writing in the Elizabethan era would have puzzled himself about special abilities. The Renaissance ideal called for the full display of all ability in each educated man, the result being indistinguishable from what would have been the outcome of the rich development of general ability, rather than from a concentration of special abilities. And indeed these matters may well have their roots in the mood of a country. So the Greeks, after the Persian Wars, created the European mind, and the Elizabethans, our Golden Age. Education has its moods, too, reflecting the social conditions and historical consequences of the time, so that perhaps this twentieth century of cigarettes and cinemas has its counterpart in the crude specialisations which are permitted in our schools. How different it might have seemed to the Elizabethans, for whom, to borrow from Rowse:

> "The English speech flowered suddenly in the magnificence of great literature. The mood becomes one of released and soaring confidence. 'Look! We have come through!' the poets seem to say, expressing the mind of the nation."
>
> (A. L. Rowse, *The Spirit of English History*.)

There is now no "Look! We have come through!" but, rather, a "God! What we still have to go through!" and Education sets the seal upon it by timidly seeking to develop the trickling aptitudes of its young, rather than, perhaps, the full tides of their general promise.

Nor must other social influences be overlooked. Thus, Public Schoolboys at sixteen or seventeen fare far better at V-tests than at G-tests, if these two are standardised in terms of an unselected sample of all boys at this age. Clearly the fact that their education is carried out largely in the classics and literature, and their home background, must have much to do with this superiority. As most data purporting to show differences in average level of intelligence between different professional classes is based on V-tests, the observed differences are at once suspect if it is argued or believed that innate intelligence is necessarily involved.

I have tried, then, to give some flashes of insight into the ramifications of so-called intelligence tests. Except for the identification of *factors*, the whole business is so full of guesswork and unexplored avenues, that anything other than a rough-and-ready use of the current tests is scarcely justified. The most we have to go upon for testing eleven-year-olds is a measurement of general ability.

CHAPTER VI

TESTS OF CREATIVE IMAGINATION

I WAS recently asked to explain, if I could, why the modern child is so unresponsive, so lacking in initiative, so willing to sit inert and spongelike in a cinema, so little given to be imaginative on his own account. There was, I felt, some point here. My impulse, with Rowse in mind, was to refer, for an explanation, to historical trends and to the prevailing mood of the country: but as the questioners happened to be Dons in social and political theory this scarcely suited. The hypothesis of "need-gratification" was at hand, too, to account for it all, but I had to admit that although the Elizabethans were adventurous and creative, who, after reading Edith Sitwell's *Fanfare for Elizabeth*, for example, could possibly miss the unconscious significance of the cruelty, turpitude, and harshness of this Golden Era? Far from needs of the kind referred to in Chapter I being satisfied, would it not be truer to say that *non*-gratification, and lack of real satisfactions, characterised the period? But this merely shifted the questioning to another plane: is it not true, after all, these questioners asked, that it takes a little madness to make a man creative—aren't all artists, poets, and inventors apt to be neurotic? Mention was made, indeed, of Leonardo da Vinci as a case in point: the famous "Leonardoesque smile" on the face of the *Mona Lisa*, greatest of his paintings, is accounted for by Freud (in *Leonardo da Vinci—a Study in Psychosexuality*) as the wish-fulfilment of Leonardo's infatuation with his mother, which he never was able to gratify except in this vicarious manner by painting an idealisation of her smiling face on almost all his paintings, and on the *Mona Lisa* in particular. That something of the kind could have happened is supported, I agreed, by the fact that husbands and wives today, and engaged couples, are often astonishingly alike, especially in features and about their mouths: yet few of them are aware of it—not only is love blind, but life's partners are chosen narcissistically. But to this extent, Leonardo, I was quite certain, was no more neurotic than most of us, and would have passed the Rorschach Ink-blot Test with flying colours as an expressive, highly developed, and responsive personality.

Fortunately I did not have to answer all the questions raised in this way, but I thought it would be interesting to describe for my questioners some mental tests which provide, I believe, a better general account of what is necessarily involved in being creative and constructively imaginative. This would serve, as well, to expand a little upon the theme of these chapters, that although abilities and talents may be rooted in innate capacities and aptitudes, they depend far more upon environmental interplay, upon what Spencer thought of as organic interaction.

One V-test is of particular interest in this connection; it is a test of poetry-writing, and invites the child (or the adult, for the test is for anyone) to complete twenty bits of poetry in an hour's testing. In some cases only two lines have to be added to a few already given, but in others up to five or more are required. (The test in its original form was devised by one of my students at Oxford, Dr. P. Gordon Smith, to whom I am much indebted for many pleasant hours of discussion on poetasters and their critics.) Question No. 11 was as follows:

"I saw old Autumn in the misty morn
. . . .
. . . .
. . . .

(Add three lines to continue the opening.)

Question No. 19 consists merely of:

"Whirl up, sea,
. . . .
. . . .
. . . .
. . . .
. . . ."

(Add five lines to finish this poem, preferably without rhyme.)

Typical of the kind of answers provided by children are the two endings (*a*) and (*b*) to the following four lines:

"The fairies break their dances
And leave the printed lawn
And up from India glances
The silver sail of dawn
. . . .
. . . ."

(Add two lines.)

(*a*) "And ladies take their dockets
For utility sheets so gay."

(*b*) "The candles burn their sockets
The blinds let in the day."

Children of adequate educational background find it fairly easy, even at eight or nine years of age, to provide at least some lines of tolerable sensitivity, if not of real poetic merit; and it is not difficult to mark their work, and to make the test nearly as "objective" as any ordinary new-form type of scholastic test. Thus, scored on the basis to be considered below, this V-test was found to have a *g*-saturation of 0·75, and a *v*-saturation of 0·60, for a sample of eight hundred eleven-year-olds.*

Scoring the test presents no real difficulty; what is more important is to have in mind what is to be considered as constructively imaginative and creative, and what not. We can all agree that

"Tell me not here, it needs not saying,
What tune the enchantress plays . . ."

is poetry, and that

"She played on a harp
And caught several carp . . ."

is not. We might agree, too, that example (*a*), with its mundane utility sheets, deserves no marks at all in comparison with (*b*), if mental development and creative sensibility mean anything to us. But it would be better to score less by impression, and more in terms of an appropriate hypothesis about the nature of creative writing, and still better if evidence can be provided to support this hypothesis rather than any other.

---

* This makes a total objective variance of 0·92, (i.e. $0{\cdot}75^2$ plus $0{\cdot}60^2$), and a reliability coefficient of at least this amount.

As for this hypothesis, I found it instructive to distinguish between two rather different forms of thinking, "objective" on the one hand and "subjective" on the other, and to suppose that whatever else may be involved, creative writing is necessarily an expression of the "objective" form. In a sense, of course, all thinking is subjective in so far as a particular person is the thinker, but one's memories, dreams, reverie, and knowledge are peculiarly one's own; and these are usually "subjective" in our sense of the word. If I ask who wrote the following:

> "Two old Bachelors living in a house,
> One caught a Muffin, and one caught a Mouse,"

you either know that Edward Lear did, or else you don't. Knowledge of this kind, like a dream, is particular to a person, and in that sense "subjective." But if I put the same two lines in a question which asks instead, "Are these lines about two *men*?" then there is a reasonable certainty that they are, if "bachelor" has the usual connotation, and most of us should be able to give an answer. Thinking of this kind is "objective" to this extent. Reasoning, judgment, logical thinking, and the like are examples of what, without any deep philosophical meaning, I like to call "objective" thinking.

But there are still other differences between "objective" and "subjective" processes. Dr. P. G. Smith gives a few amusing examples of children's answers to the following question:

> "Shining like slugs
> The cars came fast;
> Across the night
> Their glances glowed;
> With purring hearts
> Approached and passed
> . . . .
> . . . .

(Finish this description of cars at night by adding two lines.)

The following completions are "subjective" ones:

> (*a*) "A drunken Scotsman
> On the road."

(*b*) "Leaving the tramp
Shouting 'Damn 'n Blast.' "

(*c*) "Me
A poor old tramp."

In addition to the characteristics just given, these answers illustrate a certain arbitrariness in "subjective" thinking, in that the completions do not follow inevitably from the previous lines, but are detached and split away from it. The Scotsman might be on the road, and the tramp, as well as myself: only it is quite irrelevant who is.

Look, however, at the following answers:

(*d*) "In silent flight
Along the road."

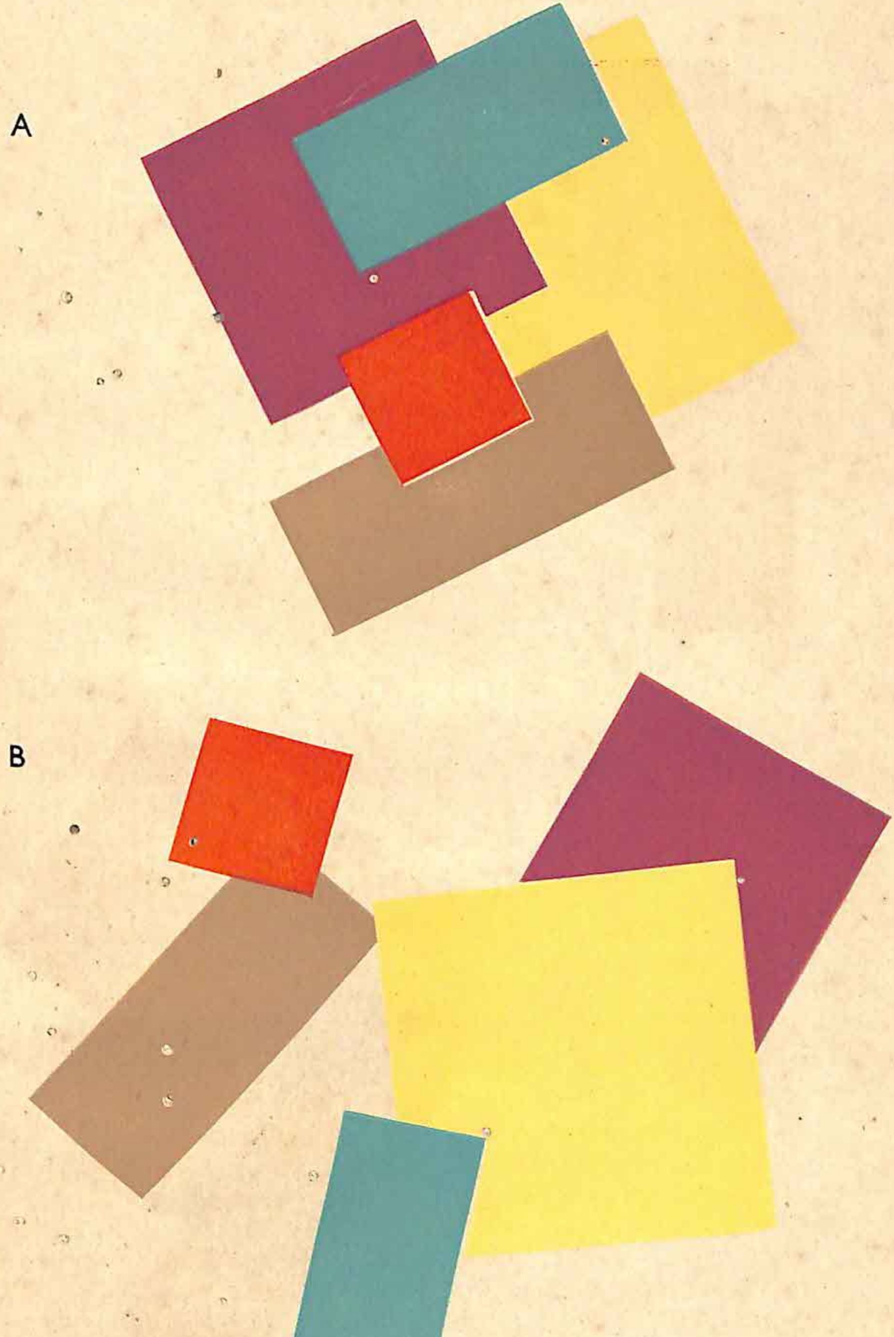
(*e*) "And sped along
The tape-like road."

(*f*) "Along a broad
Bright blade of road."

These depend on the presented lines, and form with it a coherent whole, and there is nothing irrelevant about them: they admit of being regarded as either correct or incorrect, whereas the answers (*a*), (*b*), and (*c*) were neither incorrect nor yet correct. There is, in addition, something "potential," something "predictable," something "pregnant" about these "objective" answers (*d*), (*e*), and (*f*); they set one "yearning," whereas "subjective" ones merely make one laugh, or have a dead-stop ending. It is easy to understand why, on this account, the rather funny lines written about utility sheets and dockets (page 61) have so little merit.

But to be "objective" is not enough if a piece of poetry is to be creative as well as intelligent. All well-made Intelligence Tests are exercises in "objective" thinking, and it is far from true that the most intelligent person writes the best poetry. How to distinguish between creative and merely intelligent work is the crucial matter, and I am not likely to succeed in a description of the difference, except perhaps to say that the one is characterised by cognitive complexity, and the other by its "pregnancy with newly expressed emotions." No profound theory of creative

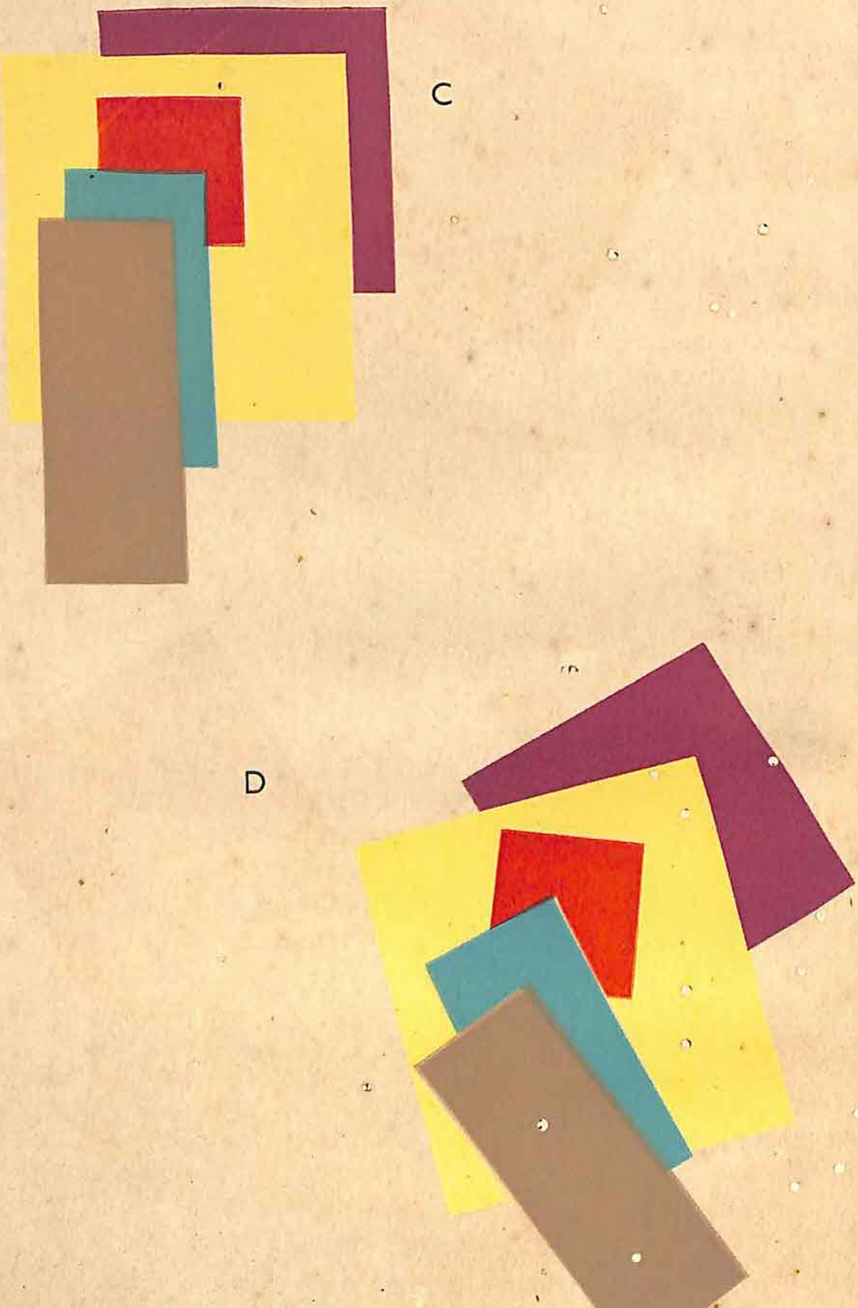
Plate I



ART FORM TEST

(Slightly reduced)

Plate 11



ART FORM TEST

(Slightly reduced)
]

work, however, is necessary for examining the poetry-writing of children at this point. It is sufficient to keep in mind this distinction between "objective" and "subjective" thinking; "subjective" answers, which involve mere associations, or purely passive, personal, meanings, can be put on one side as not creative; and "objective" answers can be put on the other side, from which to choose those that impress one as being creative because of their finer emotional significance.

So much for hypothesis: but a *factorial* study of this V-test in relation to other mental tests gave some evidence of its pertinency, for when the test was marked on the basis of giving high marks to lines of the "objective" plus emotionally significant kind, and low marks to mere "subjective" answers, a small but significant factor was discovered in addition to the *g* and *v* factors found in all V-tests. This factor, which we called *ae*, was lost if "subjective" answers were given high marks as well. I am prepared to predict, too, that its significance will increase when more children are tested who have had the benefits of the preparatory school type of literary background to which I attribute it.

To return, then, to the work done by young children. This test was, in fact, applied on one occasion to eight hundred children as part of a Special Place Examination with the factorial results already mentioned (page 62), and it is sufficient to say that the work these and other children produced could be scored satisfactorily. It is what followed that is important. We found that children at nine or ten years of age often wrote far more sensitive poetry than those much older, their lines having the directness and even the flavour of early English, as though Chaucer had been sitting beside them, influencing their feelings and style. This only happened in the case of avid readers, in attendance at good Preparatory Schools, who were clearly being educated in a milieu steeped in literary interests. Few, if any, Primary Schools in the country can have the staffs, none has the kind of syllabus, and probably none the everyday elaboration in style and use of language of these first-class Preparatory schools. The factor *ae* is very largely a cultural one, therefore, and not only so, but the quality of the poetry written at this age, up to the point in adolescence when false sentiment and self-consciousness are destructive of all "objective" thinking, seems to be an inevitable outcome, an organic growth so to speak, of this literary milieu. One feels that the self-same answers, with the self-same poetical simplicity, would have issued from any generation of boys, educated in such a background, in Chaucer's day no less than now.

"Whirl up, sea
And wave with your breath
The deep billows . . ."

is the kind of writing I have in mind, but in many a line in this test "objective" thinking of this kind is exemplified over and over again in the work of ten-year-olds who are *un*-selfconscious, and whose writing is governed by "objective" processes even in style and emotional quality.

I am suggesting, then, that something in the social environment with which the child is attuned and interacting is of critical importance in the development of a special aptitude. In this case the aptitude apparent at ten is later smothered by the thick blankets of literary instruction in Grammar or Public Schools: naturally the well-educated adolescent writes more elaborate verse, often cleverly, but it lacks the spontaneity and freshness of the younger child, it is often merely imitative, and it fails very largely because its roots are in "subjective" processes.

I have no doubt that it is still not very clear, to the reader, in what "objectivity" consists, or why it is characterised by inevitability, or how it operates, and I have therefore chosen another mental test to clarify the matter. The test I have in mind is called the Art-Form Test, studied by another student, Mr. E. J. Jeffery (see Plates I and II). In this, five pieces of coloured cartridge paper are provided, viz.:

Bright yellow ($2\frac{1}{2}''$ square)
Maroon ($2''$ square)
Crimson ($1''$ square)
Brown (rectangle, $1'' \times 2\frac{1}{2}''$)
Green (rectangle, $1'' \times 2''$)

The child is invited to make a pleasing composition with these, on a sheet of white paper (quarto), and when completed to paste the pieces in position. Six different compositions are called for. Figure A shows a product of a five-year-old boy; Figures C and D those of a Slade School pupil, aged eighteen years. Figure B is a more lively piece of work. Certain interesting principles emerge from this test. Again there is freedom and spontaneity in the use of these five pieces by younger rather than older children—five- and six-year-olds sometimes produce far more pleasing compositions than their elders; and although no five-year-old could construct the complex pattern shown in Figure D, it is equally true that no Slade student seems able to do anything quite as unsophisticated and as fresh as Figure B. One of the principal reasons for this is the way the shapes of these five tiny pieces of paper determine what we shall do with them: 95 per cent of us, for example, use these pieces in *regular* positions on the white paper, either sitting on their bottoms or else on their diagonals, or otherwise placed in rigid positions relative to one another and to the page on which they are being composed, as in Figure C. No one ever thinks of throwing the pieces randomly on the white page, and achieving a lively spontaneity in that way, as in Figure B. Yet experiments show that many productions, which are well balanced, harmonious, but regular and shape-dominated in form, can be made far more pleasing æsthetically, even judged by those who constructed the original compositions, simply by randomly tilting the pieces. It is because the five-year-old is not dominated by the shapes that his productions are sometimes so naïvely pleasing. Here is the core of much that cripples and strangles the creative impulse in art—dominance of the art form. Royal Academicians, no less than children, suffer from the same malady: indeed not twenty of the paintings in any year's Royal Academy are free from unessential rigidity of this nature.

Liveliness of form does not, of course, in itself make a work creative: but dominance of form destroys any chance it ever had of being worth a moment's regard. This is a simple first principle of æsthetics. It, more than anything else, accounts for much of the genius in the paintings of Cézanne; and one only has to compare Picasso's painting of Gertrude Stein with almost any portraiture before it, to see how free it is from the crippling and dominating effect of shapes which, in most great portraits, merely parallel the frame, or else cut into it as a series of parallel planes, as is the case in Figures A and C. Here, then, is an illustration of the kind of "interaction" at work in creative thinking. In this case the forces inherent in a mere square or oblong insist that the child, or the artist, shall do *their* bidding, as has happened in Figures A and C. It is equally unæsthetic if the mind, on the other hand, works in a vacuum, uninfluenced by and unmindful of these forces. The best art involves interaction between the two, neither constraining the other. This happened, I believe, in the Chaucer-like poetry of the well-educated preparatory school boys, and it is found pre-eminently in a picture like Picasso's *Gertrude Stein*. Education is a vast muddle out of which interacting "objective" processes have to fight clear, as the famous psychologist Max Wertheimer suggests in an essay which describes how a child learns to find the area of a parallelogram (the essay is found in his book, published posthumously, called *Productive Thinking*): psychology can help at times to make the fight a little less wasteful and fruitless to all concerned, and I believe that the Art-Form Test is a case of the kind, since an understanding of what it involves has many lessons to offer to teachers of art and artists alike.

As for poetry-writing, so also for this test, when art is a daily and proper educational experience, and when "objective" processes have been isolated and are either controlled or else are free to evolve creatively, it will be more obvious than it is at present how many of our abilities are rooted in interaction of the kind this Art-Form Test illustrates so well. Children can be chosen for their æsthetic potentialities, up to a point, in terms of these tests, but in all of them the special factors involved are very small, and only when instruction and training has become alive to the facts of "objective" thinking will it ever be possible to increase their significance. The mental tests merely provide a hint of possibilities, and, if for no other reason than to point to such potentialities for feeling honestly, seeing clearly, and reacting expressively, I would add Poetry and Art tests to the armoury of choice for Secondary Education. Poetry tests could well replace English papers, perhaps, and Art-Form Tests might with advantage oust Arithmetic examinations. But the real issues here cannot be faced until education crystallises the conditions under which the æsthetic impulses can find expression. I am sure that at ten or eleven years of age, and earlier, able boys and girls can write fresh and individual poetry: it was ten-year-old Colin Francis who wrote the poem in our Anthologies that begins:

"Over the bleak and driven snow
A voice there came a-calling
'Where are you going to, Tony-O?
Where are you going this morning?' "

Even four-year-olds have dictated verse from prams: Walter de la Mare, remember, gives us Michael Abercrombie's:

"Nell
Fired a shell
Out of hell.
It reached heaven
Punctually at seven."

But these same boys leave school at sixteen far less imaginative, less emotionally sure, and far less responsive than they were before adolescence.

CHAPTER VII

PERFORMANCE TESTS

EXCEPT for the Art-Form Test the various mental tests so far mentioned have been of the pencil-and-paper variety, which are widely used, of course, for testing large numbers of children at a time. There are children, however, who are supposed to be at a disadvantage in these tests, and who think better "with their hands " than with their brains (their efforts would be no worse, perhaps, if they used their feet instead), and for these *performance* tests are usually recommended. They are constructed of bits of wood, which the child manipulates in the process of finding a solution to the problems involved; meant to be substitutes for pencil-and-paper Intelligence Tests, they are, of course, invaluable for testing illiterates. In *factorial* terms, however, they are poor tests, of low reliability, and I do not propose to consider them for their straightforward use as *quantitative* instruments. The *g*-saturations of the best performance tests, for example, are of the order 0·70 only, compared with 0·95 for a soundly constructed pencil-and-paper test.

It is for their *qualitative* indications that we use performance tests, and for this they are irreplaceable and invaluable. I have described one such test in the *British Journal of Psychology* (1939) which is perhaps particularly interesting. It consists of twenty simple large-scale jig-saw puzzles similar in form (see Fig. 8, page 71), which make the child give many repeated displays of his performance so that its characteristics can be the better observed. A special technique (Q-technique) is used to describe the performance, about which I shall say more in the sequel. Another test is described in considerable detail by Rapaport in his *Diagnostic Psychological Testing* (1945): thirty-three common objects, such as knives, forks, spoons, screwdrivers, and the like, are put before the child who is invited to sort these into objects "which belong together." Ach's Test, sometimes called the Vigotsky, and sometimes the Hanfmann-Kasanin Test, is also well known: it consists of twenty-two small wooden blocks, of

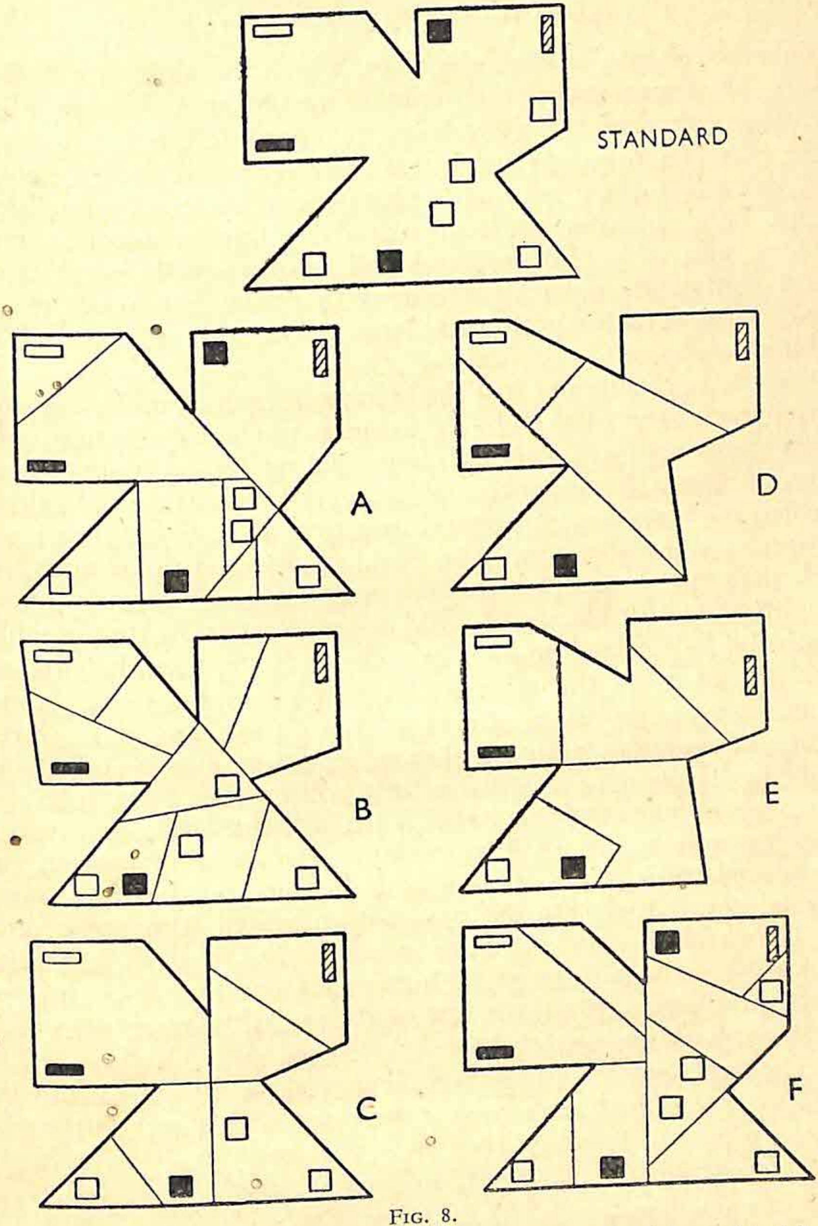


FIG. 8.

The "standard" is a mauve-coloured board about 10 *inches wide, with green (shaded), red (black), and bright blue (white) patches painted on its surface. Each test item consists of from three to nine pieces which, when fitted together, form a board similar to the standard, although in no case identical with it. There are twenty test items in this particular test, of which the first six are shown above.* (See also Plate IV, facing page 81.)

(Reproduced, with permission, from *Brit. J. Psych.*, 30(i), 1939.)

different colours, shapes, and sizes, which the child is asked to sort into four groups, each containing blocks which are alike. In any of these tests the psychologist is not interested so much in the correct solution as in *how* it is arrived at, and what the child gives away in the process about his general personality qualities. One child handles the test material gingerly, another with every sign of confidence, and still another with vacillations and confusion: the tests are used to probe into qualities of this kind, besides giving evidence about the way the child thinks.

We have to suppose that the behaviour opened up in this way is characteristic of the child's habitual modes of reaction, and this seems reasonable enough when we see him at work. There are, of course, many aspects of his everyday thinking behaviour which the tests do not pretend to touch, such as whether he is prone to rationalisation, or to highly individual projections, or whether he is inclined to be opinionated, or already over-sophisticated for his age. A child of seven sat at my dining table recently, leaned back in her chair, closed her eyes, and chattered merrily away to the table at large, philosophising on some childish topic or other, almost as though she was in a trance: much of everyday talking and argumentation, gossip and small-talk, is of this nature, with as little solid virtue in it. It is the purpose of performance tests to probe below all such verbal façades, to learn, in doing so, about a person's temperament, his volitional habits, his handling of inductive and deductive processes, his ability to see ahead, to hold his mind in suspense, and much else besides. All these are *mechanisms*, so to speak, of thinking. If we want to learn *why* or how much he rationalises, or projects, or chatters, or all the rest of the verbal blanket, tests of a different kind altogether have to be used.

The outcome of testing two eleven-year-old boys, A and B, will serve to illustrate what can be done with a test of the Q-board type:

> "A is a small, physically frail boy, who approaches the test situation timidly. This hesitancy is belied however by the directness and brilliancy of his thinking. Clearly a superior boy, sensitive but not highly-strung. His mind is highly flexible: he delays decisions until he has the facts at hand on which to base them; he moves from one concept to another cleanly, without losing

> sight of any; and he can work with several concepts at a time in a complex way. The anxiety he shows in relation to the test as a whole, a reflection of his social shyness and withdrawal, is lost in the actual work. Is clearly impractical in the sense that 'his fingers are all thumbs'; his movements are erratic, lacking grace and roundness. But he is nicely adjusted in his thinking and doing—his inductive and deductive thinking is balanced and appropriate. In brief, a boy who commands respect, who is introvertive and sensitive, but of sound intellectual promise. It is not surprising to find that he likes mountain climbing, in spite of every physical indication to the contrary, so compelling and well-developed is his personality."

This boy has in fact an Intelligence Quotient of the order 160; he has been top of his Form, the senior one in his school, for a year now. He'll never be a prefect, and is heartily sick when he has to return to his school each term. A Rorschach Test gives much the same picture for him:

> "A clever, introverted boy, gentle and in some ways ingenuous. Is highly intelligent, abstract in type, but with a fund of common sense and great clarity of perception for a boy. Is persistent, clear-minded, a boy with ideas and a great diversity of intellectual interests. But it looks as though he will always lack fine æsthetical sensibilities, and there is some inner conflict which, however, is unlikely to show in any marked neurotic manner."

The other boy B made a different impression when tested on the Q-boards:

> "Also a superior boy, but with a natural manner. He is self-possessed, matter-of-fact, witty. Not as abstractly intellectual as A, but is more practical minded. He is flexible too in his thinking, but with some lack of firmness—he is never, of course, 'all at sea' in what he does, but he has to make efforts to come to grips with the necessary concepts. Not quite as persistent as A, and there is perhaps too much passive speculation about what he does, which makes him appear to be slower than he is. In short, charmingly natural, but a little sluggish."

The Rorschach again supports this: the boy is far more balanced, has finer æsthetical sensibilities, more tact, greater stability, but nothing like the exceptional abstract and generalising ability of A. His I.Q. is not less than 130.

Thumb-nail sketches of this kind are considered, by many, to be unreliable and of dubious validity, and they do sound a little like a list of ingredients for a cake or pudding in which a spoonful of self-possession is added to an ounce of speculation. Yet it is easy to show that these "characterological" descriptions are reliable, in the sense that different observers, by different methods, give much the same account of any child: what they are valid for, or diagnostic of, is another matter. Selection in the German Army during the earlier stages of the last war depended considerably upon character sketches similar to the above, which were written by the army psychologists following fairly intensive testing and interview sessions with each man individually. In the case of the British Army, having put potential officers through their paces in the War Office Selection Boards, the results of all the testing and observation had to be summed up, not only as a decision to accept the man or not, but as a thumb-nail account which would make clear the reasons for the decision about him; and clearly it would be useful to have an account of the kind, that could be trusted, about each child when he is being considered for a place in a Grammar School. As the description of *performance* as such, for the behaviour of a child in the performance test situation, involves us in precisely the same need to reduce a mass of detailed observations and inferences to a few bare lines of description, it is of interest to look at a technical way of handling this matter. It is quite easy to show that these descriptions, like much else, can be reduced to mathematical terms.

Let us suppose that the performance by a child, smooth-flowing though it may seem to be, is made up of innumerable bits of response held in suspension for our regard. The bits include everything descriptive of the performance, for example: (*a*) "he shows flashes of insight every now and then", (*b*) "he lacks perseverance", (*c*) "he is often confused", (*d*) "he uses trial-and-error methods", (*e*) "he can suspend his judgment", and so on. A very large number of these brief descriptions, we may suppose, can constitute a "population" of responses, especially if the performance test situation gives rise to very varied and extensive responses. Now when we apply a G-test (Chapter V) to children, we base the measurements provided by that test upon how the child compares with an unselected sample of the whole population of children of its age, class, and background: we define a population of children, and standardise the test in terms of a sample drawn from this population. The marks gained by the children can be correlated * with those gained by the same children in any other test, and *factorial analysis* consists of the analysis of these correlation coefficients along theoretical lines. Everything here depends upon the definition and stability of the population of children, and upon the adequacy of the samples drawn from it. Precisely the same conditions can be postulated for *performance* in general; a "population" of response items can be defined, and a sample drawn from it, consisting in effect of a large number of brief statements of the kind (*a*), (*b*), (*c*) above. Now, when a G-test is applied to a sample of children, each *child* gains a score for what it achieves in the test; similarly, then, when a child performs in a sample of response items, each *response item* can be given a score for its significance in the child's performance. The scores given to the sample of response items for one child, can be correlated with those given to the same sample for another child's performance. In short the *children* can be correlated one with another, in the same way that mental tests are, and analysed by factorial methods. The *factors* discovered from the analysis of these correlations between children's performances will represent functional types of children, just as a factor like *g* may define a functional type of mental test.

This is all very interesting. If an item of description such as (*a*) can be said to be more characteristic or significant in a child's performance than any of the qualities (*b*), (*c*), (*d*), (*e*) . . . above, it can be given a high positive mark on that account; if the item (*e*) is of little consequence, a zero mark would be appropriate; and if the response item is significant because it did *not* appear in the performance, say the item of response (*c*), it can be given a *negative* mark. With considerations of this kind in mind, five teachers and I examined the two boys A and B with the Q-board performance test referred to above, which, it will be remembered, consists of twenty rather similar jig-saw puzzles, using the following sample of responses:

---

* A correlation coefficient of 1·00 between two tests means perfect correspondence between the scores gained by the children in these tests, the child who is top in the one being top in the other too, and that at the bottom being bottom in both tests. A coefficient of 0 means no correspondence at all between the scores. Well-made tests of the G, V, K kind correlate by about 0·70 or 0·80.

List of Response Items.—Only short titles are given; each was in fact defined or concretely illustrated.

1. Impulsive (over-movement).
2. Deliberate.
3. Uses trial-and-error.
4. Anxious worker.
5. Uses foresight.
6. Leaves well alone.
7. Decisive.
8. Holds judgment in suspense.
9. Repeats errors.
10. Inactive.
11. Awkward.
12. Deductive.
13. Hesitant and uncertain.
14. "All at sea" at times.
15. Balance of doing and thinking.
16. Flexible.
17. Uncomfortable.
18. Self-possessed.
19. Self-depreciatory.
20. Affected and unnatural.
21. Expressionless.
22. Muddled.
23. Natural.
24. Dreamy, contemplative.
25. Undeveloped.
26. Well-informed.
27. Alert.
28. Stiff, rigid worker.
29. Practical.
30. Blurred use of concepts.
31. Doesn't learn from experience.
32. Passive, sluggish.
33. Pedantic approach.
34. Verbalises responses.
35. Unable to carry plans through to completion.
36. Overwhelmed by the difficulties.
37. Rejects otherwise acceptable approaches.
38. Works with more than one concept at a time.
39. Becomes disorganised and directionless.
40. Rigid methods of thinking.
41. Lacks persistence.
42. Makes far-fetched connections.

43. Vacillation between one idea and another.
44. Rapid.
45. Retarded conceptualisation.
46. Dissatisfaction with solutions.
47. Compulsive form of thinker.
48. Receptive, enquiring.
49. Boisterous, loud.

We proceeded as follows (these are extracts from the procedure as it was described in the article in the *British Journal of Psychology*):

> ". . . the twenty tasks (of the test, see Figure 8) are very similar, involving similar problems, goals, and material, and making similar demands upon the thinking and manipulative abilities of the individual. It is as though the same task were presented to him, in a modified form, on each of twenty occasions. . . ."

> ". . . as the subject works at the test the Observer sits in good view of all the performance, and goes through the cyclostyled list of items, one by one, placing a *tick* against those which are significantly displayed . . . and a *stroke* if they are conspicuously absent in conditions otherwise calling for their display. . . ."

This procedure is repeated at least once for each of the twenty tasks.

> ". . . Two ticks or strokes might be given on occasion, if the quality concerned seemed to be extremely significant . . . at the conclusion of the twenty tasks a count is taken of the number of ticks or strokes (or their difference) adjacent to each bit of response, and this number is the score for significance of that item for the individual concerned. . . ."

> ". . . A response item which is neutral for nearly everyone, can be highly significant in another's performance. . . ."

Each of the items, then, gains a score to represent its significance in the performance of the particular child who is being tested. The arrays of scores for different children for the same list of response items can be correlated; or the arrays provided by different observers, watching one and the same child at work, can be correlated.

Thus, the five teachers and I provided the following correlation table for the Boy A:

	Teacher-Observers					
	1	2	3	4	5	W.S.
Teacher-Observers:						
1	—	0·74	0·44	0·45	0·89	0·91
2		—	0·73	0·32	0·59	0·79
3			—	0·30	0·66	0·75
4				—	0·32	0·42
5					—	0·89
W. S.						—

(For Boy A, aged 11 years.)

It is at once noticeable that the five teachers correlate more highly with myself than they do with each other. The correlations can be analysed by the usual factor methods, and *one* factor, common to the six observers, is sufficient to account for all the correlations in the table.

Just as we can write down the factor formula of an Intelligence Test, and determine how good a test is in terms of its factor saturations, so in this case we can write down the factor formula for each *observer*, and say how good he is, with regard to this factor, in terms of his factor saturation. In the present case the six observers have the following factor saturations for the common factor.

Teacher 1 .	. 0·89	Teacher 4 .	. 0·47
Teacher 2 .	. 0·82	Teacher 5 .	. 0·88
Teacher 3 .	. 0·75	W. S. .	. 0·97

Clearly I am considerably more highly saturated with this factor than any of the teachers, and teachers Nos. 4 and 3 are poorly saturated. The same procedure, followed for the boy B, for the same teachers and myself and the same performance test, gave a similar correlation table, and again one common factor was significant and adequate to account for the whole table, with the following factor saturations for the six observers:

Teacher 1 .	. 0·91	Teacher 4 .	. 0·52
Teacher 2 .	. 0·80	Teacher 5 .	. 0·84
Teacher 3 .	. 0·64	W. S. .	. 0·95

A certain consistency is shown: whatever the reason, teachers Nos. 1, 2, and 5 agree more closely with myself than Nos. 3 and

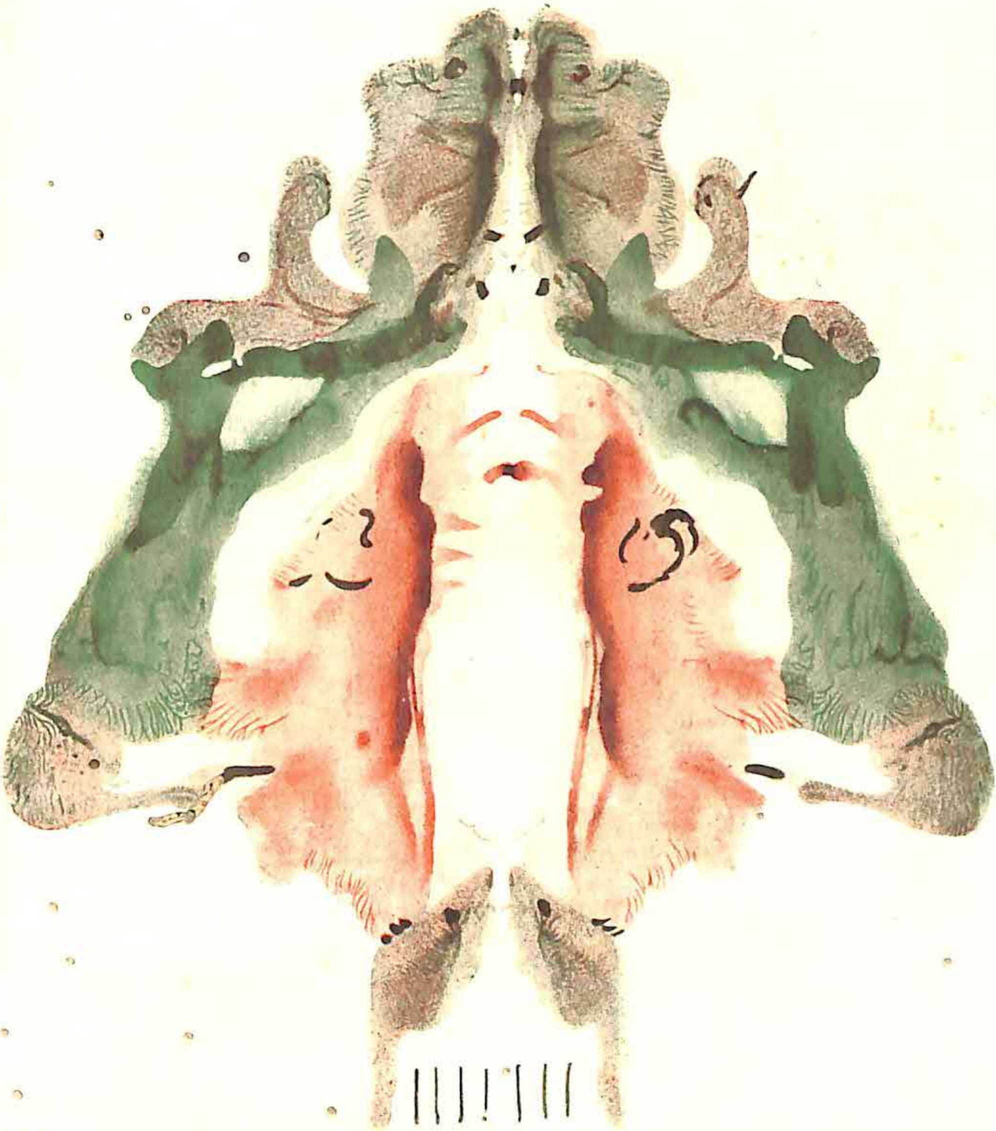
4, and again I show up best. The teachers had been trained in mental testing, but the results showed that Nos. 3 and 4 were consistently non-conforming; one was frankly unreliable, the other rather pig-headed, and reliable with respect to his obstinacy. Much more insight was shown by the others, and, with further training, they could easily have replaced me as far as this particular test is concerned.

In the same way, with the same Q-boards, the same population of carefully defined response items, and trained observers to make the appraisals, any number of children may be tested and intercorrelated. The analysis of these correlations, on a sufficiently extensive basis, would undoubtedly provide us with the need to postulate a number of factors, say x, y, and z, each of which would help us to define a *type of performance* and, to that extent, a *type* of child who performs in this way. Most interesting of all, the *ideal* types of the kind can be defined. It is not too much to hope that one day, using appropriate performance or other test situations, Grammar School "types" will be investigated in the above way. And if any such "types" were, in fact, specifiable, we could then measure any boy for his type saturation, with the same logic behind it that allows us to measure calico against a standard yard, or cheese against a standard pound. This is not only a novel, but an intimate way of dealing with performance, and it can be applied very widely, for example to social situations and behaviour in general, as in the leaderless group tests used by the Army for selecting its potential officers. We have to distinguish, from now on, between two kinds of measurements about a child—one is dependent upon the statistics of person populations, and provides measures of a child's abilities and aptitudes; the other depends upon the statistical regard of behaviour and the impression of a trained observer, and it indicates types of children for us, and the degree to which they correspond to any such types. Large populations of children have to be used for standardising the tests used for the former, which is called r-technique; the correlations are between the *tests*. In the other case large "populations" of isolatable responses have to be used as the basis of any standardisation, and the correlations are between the *children*: this is named Q-technique.

But this is only the beginning of systematic analysis of performance. There must be a *reason* for every bit of response, for every item in the performance of a child, and psychologists are more likely to be interested in these reasons than in the perfection of descriptions by statistical means. We know, for example, that mentally defective boys tend to behave in an all-or-none, rigid, sort of way—their boots have to be put in one particular place at night, they must sit in a particular seat at meals, and the whole day can be upset for them by altering the daily routine in any way. Of course, others besides the mentally defective suffer from the same kind of rigidity! This inflexibility can be observed in the performance of defectives in tests of the Q-board kind, and it is easy to see that a concept of this kind, which ramifies widely into behaviour in general, can be made the subject of enquiry, by way of performance tests in particular.

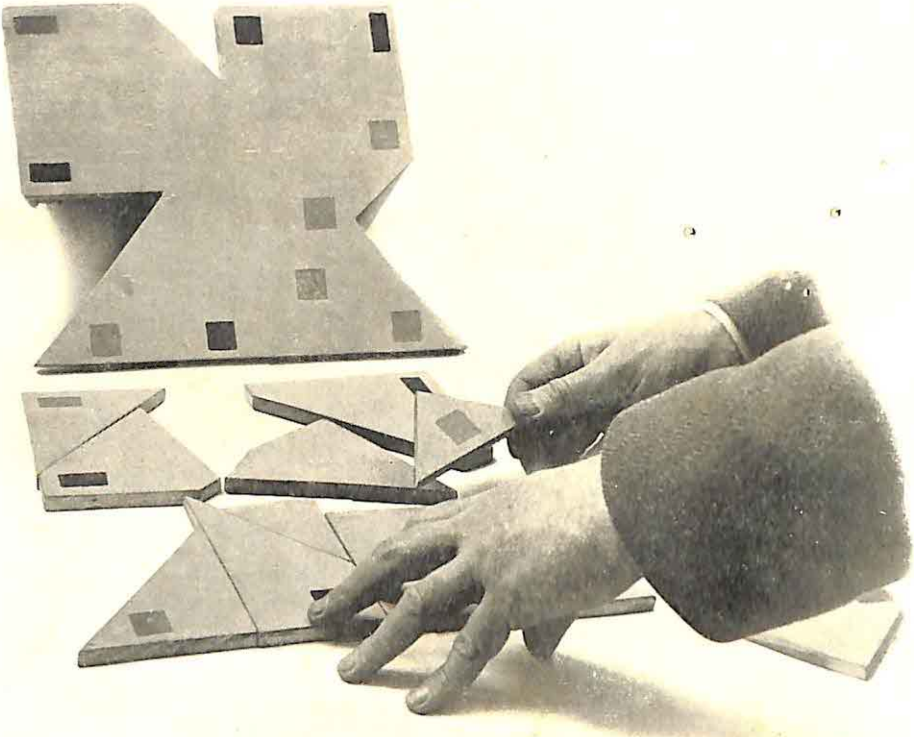
To return to current performance tests: from the quantitative (*r*-technique) point of view they measure *g*-factor very largely, but they compare poorly in this respect with almost any pencil-and-paper G-test. Some performance tests also involve a small amount of *k*-factor, and to this extent are K-tests rather than G-tests in type, but again the *k*-saturations are smaller than those in almost any pencil-and-paper K-test, and it would be almost as sound to select practical-minded children by seeing who can throw bricks the farthest as by testing them with performance tests or so-called tests of mechanical ability—the tests being used as quantitative instruments. But their qualitative analysis, whether represented in terms of general psychological concepts, or in terms of statistical descriptions and factors, should have a contribution to offer to the general problem concerning the selection of children for Secondary forms of schooling, as indeed it has for selection and psychological diagnosis in general. It is one thing to make a diagnosis, however, and another to predict in terms of it, and much has still to be done to give point to the careful probing that we can now make into children, using, in every case, a variety of tests, and depending on no one alone to provide the information we need. In the case of the two boys A and B something was learnt from the performance tests that could not have appeared in the Rorschach, and vice versa; the fairly complete testing of these boys has meant the application to them of G-, V-, and K-tests, the Rorschach, the Q-boards, and certain Projection tests which I have not described. The outcome is that there can be no doubt whatever that A was meant for an academic and relatively secluded life, and B for more practical pursuits, perhaps an architect one day. Both, however, are of

Plate III



COLOURED INK-BLOT

Plate IV



A SUBJECT AT WORK ON ONE OF THE Q-BOARD TEST UNITS

Public School type by education and background, although one is no "leader" and all brains, and the other is just a nice boy. But how foolish the parent would be who would place B in a Technical School at eleven years of age! He will be the happier man, the more developed a personality, and the better an architect for the general education he is having and should have for the next five or six years, after which it will be soon enough to think about his future training.

The outcome of the testing of these boys corresponded very closely with the opinions of their own parents and teachers, and it was pleasant to have such confirmation from an independent source. But where parents and teachers are in any doubt, testing on the above scale is always illuminating and usually very much to the point.

SENIOR BASIC TRAINING COLLEGE
BANIPUR

CHAPTER VIII

RECORD CARDS

THE policy of the Ministry of Education was to free teachers and scholars in primary schools from the spectre of Special Place Examinations and it was hoped in particular that record cards, aided by Intelligence Tests, would make possible a decision about a child's suitability for this or that form of Secondary Schooling, without the need for any form of competitive examination.

The teacher, of course, sees much of the child he is teaching, and more than a mere interview is involved, of the kind a Headmaster would give to a prospective pupil, and on *a priori* grounds it would seem that as much use as possible should be made of his judgment. But it would surely be a mistake to maintain for each child, right through his school and college days, anything like even a terminal account of his progress. If examinations were in fact becoming an educational fever, and so destructive of freedom that, as someone has suggested, the time was approaching when we would not be allowed to sow even a packet of seeds without having a certificate in horticulture, the horror of a progress book for each child, recording petty triumphs and failures right down the slippery slope of education, maintained like an Army Pay-book, is surely a greater disease. I may be prejudiced, but there is something unsavoury about reports of this kind that American students bring with them to this country, listing all their majorings and minorings in a life-long scramble with Spelling, Reading, Cookery, Art, Economics, Civics, Latin, Political Science, Mathematics, Swimming, General Science, Dramatics, Needlework, History, Gardening, Sociology, Logic, Chemistry, Psychology (experimental, speculative, animal, abnormal, child, social, industrial, genetic, and educational), Physiology, Phonetics, Hygiene, Mothercraft, French, English Grammar, and the rest, including graduation in Educational Theory. Let there be record cards; but save us from spineless dribbling of this kind!

Record cards for selection purposes should "sum up" the child at eleven, rather than report his progress. A special sizing of his aptitudes and promise is required, rather than an account of his present achievement, and it may help to examine a record card of a simple kind to see what it involves. The card has places on it for the following:

(*a*) Standard scores on Intelligence Tests (such as G, V, K) and a composite score for *general ability*, all with allowances for age.*

(*b*) Assessment by teachers of the child's promise in Arithmetic and English.

(*c*) Appraisals by teachers of special gifts and significant personality qualities.

(*d*) An appreciation by the Headteacher of the child's suitability for Grammar, Technical, or Modern Schooling.

The scores for (*a*) are provided from standardised tests, which teachers trained for the purpose can apply, mark, and scale. A score for general ability is got by adding the marks on tests (*a*) to the teacher's assessments (*b*), giving equal weight to each test and to (*b*). Having assessed the children quantitatively for the two major school subjects, the rest of the record card requires informal, qualitative appraisals, similar to those normally entered on a terminal report, but orientated towards the child's promise. The child rich in any exceptional gift or talent, for drawing, singing, crafts, debating, music, games, or acting, should have the matter referred to on the record card. Only outstanding promise in these special directions should be noted, with statements of the kind "is best at art in the school," "outstanding at games," "already plays the violin exceptionally well," "has unusually well-developed interests in biology." Roughly, only one statement should be made for every thirty children, for each special aptitude, talent, or gift: the standard should be such as would be given + 2½ marks or more on the quantitative scale referred to below.

The same applies to the section for "personality": again only the really outstanding child should have a reference made to his personality quality, much as for an exceptional gift or talent, and again orientated towards his future. Vague statements about being "helpful," or "excellent personality" are to be discounted: thus, in a class of twenty the boy A referred to in Chapter VII would be regarded as outstanding for his intellectual but not for his personality qualities (in the narrower sense of a teacher's regard of the child's social presence, leadership, and the like—actually the boy is no fool, and leads by insinuation and persuasion where others use brute social dominance), whereas B might be regarded as outstanding in personality, the appropriate remarks about him being, perhaps, "Has great charm and poise."

---

* No I.Q. should be added to such a record card unless it has been taken by a qualified psychologist.

Finally, the Headteacher makes his appreciation of the child's worth for Grammar, Technical, or Modern forms of education. He has a definite notion, usually, for what the child is best fitted relative to others in the school; his appreciation should also include any strong parental wishes, and any firm inclinations of the child.

This card has places for less than a dozen categories, and yet it needs careful handling if it is to be useful. What each entry involves has to be explained beforehand to the teachers completing it, who have to be taught, too, to use rating scales. It is advisable to have one scale, such as the following, for all assessments:

+ 2	Very good
+ 1	Above average
0	Average
− 1	Weak
− 2	Very poor

The assessment made by a teacher with a severe standard, however, may give + 1 to a pupil who would easily gain + 2, perhaps, from a less exacting judge. Standards have therefore to be controlled in some way, and this is best done by insisting that, for most conditions, the number of pupils given scores on this scale will be in some such proportions as 1, 2, 4, 2, 1 for the five points respectively, as shown below. In no case need the proportions be strictly these: we only mean that they should *tend* to be so, and any wide departures from these should be suspect, or require explanation.

There is an art in assessing. Suppose twenty have to be scaled, the proportions required on the 5-point scale basis are 2, 4, 8, 4, 2 respectively. The following diagrams explain how to go about it:

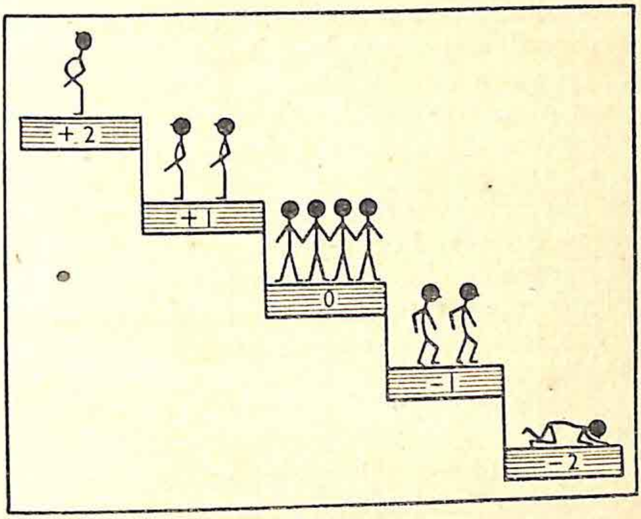

+ 2
+ 1
0
− 1
− 2

FIG. 9.

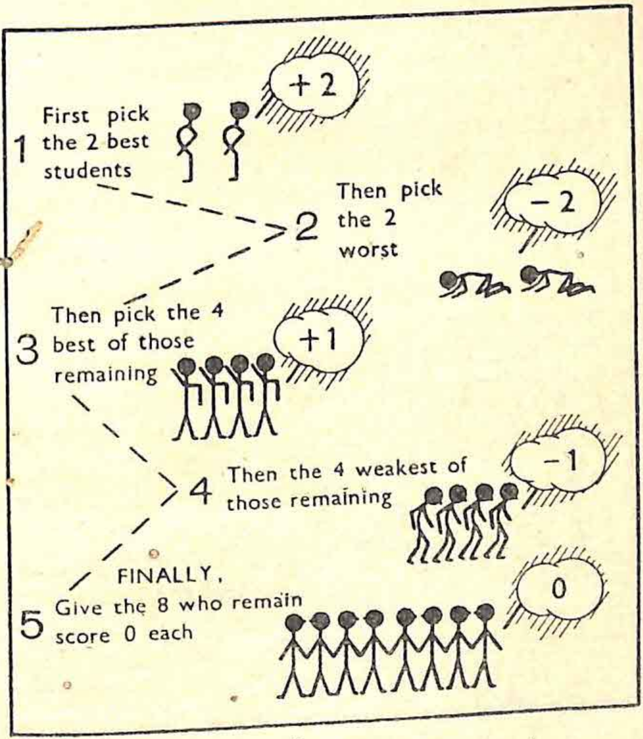

+ 2
1 First pick the 2 best students
− 2
2 Then pick the 2 worst
3 Then pick the 4 best of those remaining
+ 1
4 Then the 4 weakest of those remaining
− 1
FINALLY,
5 Give the 8 who remain score 0 each
0

FIG. 10.

But minor adjustments should follow. The assessments should now be reviewed, and it may be felt that it would be fairer to give three pupils + 2 rather than only two, and perhaps only one deserves − 2. When such adjustments are made the actual proportions given these scores may be 3, 3, 8, 5, 1 instead of 2, 4, 8, 4, 2.

Further, in exceptional cases it would be permissible to give a pupil + 2½ or + 3. For any one variable, only about one student in thirty should gain + 2½, and only one in a hundred + 3. Similarly, for exceptionally poor students, − 2½ or − 3 may be given. It is best for a small committee of teachers, if all know the children, to sit down together, taking one variable at a time, all the children being assessed for it before passing on to the next variable.

Finally, it is well known that some schools draw on superior children, owing to location, and some account has to be taken of these differences. The basic scale, however, should not be departed from, except for minor adjustments as recommended; instead, each school should have its assessments weighted, in proportion to an objective criterion of its superiority or otherwise. This is best done, as it was in the Scottish Council's enquiry, by insisting that the assessments by a school must keep fairly closely to the basic distribution 1, 2, 4, 2, 1, irrespective of the type of school, and to leave it to the statistician in a central office to make any adjustments as between one school and another.

Given this attention, then, a record card for each child has a certain usefulness. The Scottish workers, however, in their large-scale *Enquiry*, found that *such record cards did not, in fact, contribute significantly to any improvement in selection, over and above what objective tests were able to achieve*. But if it is to be the practice to eliminate Arithmetic and English tests from the testing of eleven-year-olds, it will be increasingly important to make use of the teacher's estimate of the child's promise at school subjects such as Arithmetic and English, or at Latin as well in the case of Preparatory Schools, because these will be the only guarantee of the abilities of the child. As we saw, the teacher's estimates can in themselves contribute significantly to selection—they are about as good as a forty-minute Intelligence Test from this point of view. But if selection is to be fair, nothing less than careful attention of the above kind can make it so.

CHAPTER IX

PRINCIPLES AND PRACTICE OF SELECTION

IT now remains to bring the separate strands of these brief chapters together into a tidy pattern, and to offer such advice as may seem reasonable in terms of it. Clearly I am one of those who hold that even though the child has been formed partly by heredity and partly by environment, the former is but a spark to the conflagration that constitutes the latter. As a psychologist I like to see how the fire has taken hold, which means that I seek to determine "objective" interactions in the environment of things and people, as distinct from "subjective" influences alone (see Chapter VI). But these "objective" influences also keep the fire burning here and now in the person's life—the stupid way in which the child's performance in the Art-Form Test is tied to the squares and oblongs on their bottom ends is an instance of hundreds of specific interactions which occur, in social behaviour no less than in Art, in thinking no less than in perceiving, in every feeling no less than in any emotion. It is the child as it is *now*, as it sits beside me in a room, that is both the beginning and the end of the study of its personality.

The principle of "need-gratification" referred to in Chapter I is therefore not to be understood as something merely rooted in the history of the child from its birth. No doubt some such roots there are, but when we test the child we are not uncovering some remote anxiety or insecurity of his babyhood, nor probing into times of scarcity when he starved or was ill-fed, nor are we prying into the psychosexual infatuation he had for his mother at six, nor is an Adlerian organ-inferiority at issue which was built into the child's personality at eight; nor is the intelligence we test something that existed in the embryo. The "needs" for food, for security, for belonging, for self-expression, are all *existing* conditions of interaction, opened for our regard by the exquisite delicacy of the Rorschach or similar projective mental tests. Nor are these mere abstractions, that one unravels in strands from the child, much as wool is unwound from a knitted garment: the living child expresses its interaction in terms of tangible things, like learning Arithmetic, reading English, joining the Boy Scouts, or stamp collecting—*these* alone are the real "needs" of interacting. The mental test merely indicates that there is free-floating anxiety about somewhere in the personality, and it is the psychologist's job to determine what form this takes in the present behaviour (or lack of it) of the person. So, in the case of the Air Cadet who, at nineteen, spent his "leaves" collecting engine numbers at Paddington Station, one would wonder at once whether a certain compulsiveness in this habit has its counterpart in the same indications of an obsessional kind in his test results. What applies to the emotions also serves for intellectual matters: it is always an *ability* we measure, something achievable here and now by the child, and never just a potentiality of his babyhood days.

Psychologically, therefore, one cannot discard the present attainments of a child at ten or eleven, and provided those are assessed which represent its orderly growth and not forcings on the hot-beds of cramming and coaching, they are guarantees of the child's development and stage of maturation, and the only foundations on which to guide the child and his teachers.

One other major point I have made is a matter of social psychology, expressed as an educational aim. I refer to the way the United States of America is socialising its children. I do not suggest that the non-elective system in its schools and universities is responsible for this, for it is only a reflection of the mood of the country; but there can be no doubt about its deep significance. It is democracy, made to work. I have made no bones about the hope that one and the same type of Secondary School will, in fact, be made free to every child in Great Britain, in the same sense that the High School is open to any child in the United States. This would mean a levelling and downgrading of existing Grammar Schools for the time being; but who shall weigh this in the balance against the upgrading in spirit and the improvements in adolescent and postgraduate education and training that could follow for the great majority?

But as things are, the problem is to elect a small number of children to the privileges of a Grammar School. The full assessment of any child, for its intellectual and emotional development, is an expert's business, and in the rough-and-tumble of the school system something simple and practical is required by which to make these elections, which will be as fair as possible to everyone involved. As for this, the advice given by Sir Cyril Burt (in an article in the *British Journal of Educational Psychology*, 1947) is hard to better. It is, briefly, to estimate each child for its main *factors* (such as *g*, *v*, *k*), to interview the child, to observe him in "real-life" situations devised for the purpose, to take due regard of his history and background, and from the information gathered from all these approaches to compose, finally, a "thumbnail" sketch, a synthetic picture (Burt) of the child as it is. But interviewing and observing demand technical resources. Nor can estimates of a child's *g*, *v*, or *k* be used as absolute measures (and the same applies to comparable factors in the emotional field, such as *w* for persistence of motives, or *c* for temperamental sensibility, or *a* for drive and enthusiasm); I hope I have said sufficient to pour water on any notion that such factors exist as real things, like substances or parts of a brain; they function *as if* they were real, but the relativistic use of these factors, to which I have drawn attention, shows that they are abstractions and need to be interpreted by the psychologist. Like all our general information about a child, they merely sketch in the main framework, or dimensions, and it is for us, in our description of the child, to put in the outlines, the shading, the high lights, and everything that makes the person unique.

But even Burt's advice is an ideal, difficult to achieve in the hurly-burly of the Director's office or the Headmaster's study. Something more practical is required, and, fortunately, what the Directors have done in the past on grounds of common sense and practicability turns out to be the right approach, in keeping with the facts as we know them. What we have concluded is in agreement with those Directors, and their Committees, who, without being unfair to the children, want to get the business of selection over quickly, and who select on the basis of an *order-of-merit* list for what is an estimate of the *general ability* of their children. The most able children gain the Grammar School places; the next, the Technical School vacancies, and the rest go into Modern Schools. I have pointed out, however, that general ability requires at least three or four *different* probes for its estimation if selection is to be accurate in terms of it. If selection is bad enough now for Secondary Schooling it will be worse if the Ministry of Education's advice is taken and only *two* distinct quantitative bases of selection are employed—an estimate of the child's worth by his teachers (however elaborately got up), and what verbal intelligence tests can do (however many are applied) —because a minimum of three or four distinctive probes seem to be essential for selecting children with a prediction of future success as high as seventy correct awards in any one hundred made.

Better tests can be made available for probing into general abilities at ten or eleven; and if the schools develop their children properly along "objective" lines, no doubt the time will come when it may be easier to test children so young for their special abilities. Samples of suitable tests for estimating general ability are shown in the Appendices, each given in two parts for ease of application: and experiments might be undertaken, too, with a relativistic use of the G, V, and K components. The tests can be applied on one day, preceded by a forepractice sheet or sheets the day before, and I would recommend that a child's score for general ability should be his total on the G-, V-, K-tests, plus an estimate, T, made by his teachers or drawn from the child's record card, the four (G, V, K, and T) receiving equal weight.

It is then simplest to elect children into the various Secondary Schools on the basis of an order-of-merit list, making it depend a little, however, upon a scrutiny of any record cards that may be available, and having regard to the *proportions* of G, V, and K entering the total score (high V is particularly prognostic of success at schooling). Finally, some special attention has to be given to the "borderline" cases. It is at the borderline between selection and non-selection for a Grammar School place that the whole brunt of testing lies. The statistical indications are that although fifty per cent of the Grammar School places can be filled directly from the order-of-merit list for general ability, *twice* as many as this should be regarded as "borderline" cases, and in order to deal with these some additional testing or interviewing is essential. Some Directors try to follow this practice, setting another day's testing for the borderline children, another day of tests of general ability; but these must be as different as possible in type from any used in the original battery which provided the order-of-merit list, otherwise they may add to the reliability without increasing the predictive value of selection. Other authorities supplement the original testing by an interview and individual test of the performance kind, given to all who are worth serious consideration: but there is little evidence that this is satisfactory, largely because of the small factor saturation of any contribution it makes to selection as a whole, and because performance tests simply must not be applied by relatively untrained teachers, however sound their intentions. If the problem of supplementary testing, whether of a limited "borderline" or of all who merit it, has to be tackled seriously, a fresh approach altogether is indicated, different from mass testing, from record cards, and from any amateurish interviewing.

One possibility was made familiar by the Army's War Office Selection Boards: potential officers were selected by a team of military officers, a psychologist and a psychiatrist, who lived with the candidates for a few days, observing them at meals, at play, taking part in discussions, undergoing tests, and entering into "leaderless" group situations. Similar ideas have already been tried out for children, and there can be no doubt about their interest. My own experience is that I have never learnt as much about a man or child by these social techniques as I have by more individual diagnostic methods, although the one needs to be supplemented by the other; and it will be essential, in any case, to have the right kind of psychologist behind any imitation of the W.O.S.B. methods for selecting potential leaders. Another approach to the "borderline" cases would be to follow the mass testing with a more expert examination by psychologists.

My own preference for supplementary examination of children is to train a few teachers to test them in a *qualitative*, Q-technique manner, along the lines described in Chapter VII for the five teachers and myself. The core of it is the teacher's trained judgment about the worth of a child, which, as we saw, can be matched up to that of the psychologist (and incidentally the psychologist is tested in the process), so that only the best teachers for the purpose need be retained. Teachers may work in pairs, assessing independently before comparing notes; and they could be made responsible for providing thumb-nail sketches of up to fifteen children, their probes for the purpose being G, V, K results, Q-board performance tests, a controlled interview, and observation under a "real-life" situation, as Burt suggested. But it is essential to have the trained psychologist close at hand in all such appraisals, and in the long run there can be no improved selection unless he is engaged daily on experimental work with mental tests, factorising, refining, exploring possibilities, and always with two objectives, first to raise the predictive significance of the tests he is using, and second to suggest, by his tests, what might be expected of children.

I do not wish to imply that the tests in the Appendices are wholly satisfactory, but they fit squarely with sound technical work on mental testing for the measurement of general ability, with some faint hints for the spotting of special abilities. Yet I would be the first to admit that we know far too little about the way these G-, V-, K-, or other types of tests work themselves out in the growing personality. Nor have I touched upon S-tests, of social intelligence, which make use of film strips and pictures, nor upon Projection Tests in general. The real problem remains—are children with the highest general ability, at eleven, likely to be the most promising selections for Grammar Schools, for Technical Schools, and for life in general? The answer must be that many of them are, and that if the best are not always selected, the most unsuitable are certainly rejected.

I recently tested twenty-five eleven-year-old boys, and a similar number of men and women (ages twenty-six to thirty-six),* to see whether some evidence might be forthcoming about the conclusion I have just drawn. Each was given a set of GVK-tests similar to those used in the Air Force, and a Rorschach diagnosis, supplemented where indicated by Q-boards and other tests. The special point was made of discussing the results (omitting any derogatory or over-severe observations, except where it was felt that the subject could "take it") with each person tested, to see what agreement existed between my psychological account of his personality and his own views about his outstanding characteristics, whether good or bad.

In the case of the grown-ups there was something to compare results with immediately, for each was interviewed by five Directors or Managers independently; the outcome was fairly good agreement with my own summing up of the personality of each applicant. Even with so small a number, it seems certain that no adult of low general ability is acceptable in any way; but approximately half the men or women of high general ability are likewise unacceptable. On the other hand, those men or women of high general ability as shown by GVK-test results, whose personality qualities are maturing and positive as shown by Rorschach Test and interview, appeared to be particularly desirable applicants. The outcome of the GVK-testing is given in the following table, where the score is an average for three tests, G, V, and K respectively, the minimum mark being 0 and the maximum 99 in each:

---

* They were from much the same social class, many of the grown-ups graduates from Oxford, Cambridge, London, and the Provinces, and the boys from preparatory schools or of Grammar School standard from a primary school. The adults were applicants for commercial appointments in connection with the work of an advertising agency, embracing a wide range of situations, from copy-writers and commercial artists on the one hand, to business representatives and secretaries on the other.

	Applicant's Number	*Applicant's Average GVK score*
Applicants considered by Directors to be well worth appointing	1. PK	94
	2. NS (F)	94
	3. CA (F)	95
Applicants considered to be worth a trial	4. MG	98
	5. TB	96
	6. RT	90
	7. SL	90
	8. RE (F)	80
	9. SF (F)	83
Applicants not acceptable to the Directors	10. YB	93
	11. SWa	68
	12. SN	94
	13. LE	43
	14. JN	58
	15. HN	85
	16. GE	98
	17. WY	90
	18. SNa	66
	19. TT	75
	20. RS	80
	21. ES	78
	22. SWb	88
	23. DN (F)	94
	24. BJ (F)	96

(F = Women.)

Clearly from this the GVK-tests alone would be no use for picking out the candidates who are considered to be worth appointing or worth a trial; but they would be valuable for weeding out candidates who ought *not* to be considered for either.

The personality assessment by Rorschach diagnosis, supplemented by my own interview, gives a very different picture. It is difficult to present the information in a simple form, for each applicant is a different personality, with weaknesses or strong points for very different reasons. It may be best, and at the risk of making the descriptions caricatures because of their extreme brevity, to give a few notes about each applicant in turn:

No. 1. Guard's Officer, flexible, clear-minded, well-adjusted, confident.

No. 2 (F). Attractive, buoyant, happy, easy-going, and very popular. Wren Officer. Cambridge graduate.

No. 3 (F). Well-balanced, capable, sensible, with well-developed interests and sound character generally. B.Econ. (Wales).

No. 4. Stable, but a little unapproachable and "heavy." Sound personality structure nevertheless, with high generalising ability. Army Officer. Public School. Cambridge graduate.

No. 5. A hard-headed, ambitious, business type who knows his limitations. Lacks poise. Is calculating. R.A.F. Officer. B.Econ. (London).

No. 6. Has flair, pep, self-confidence; has taste, is egocentric and sophisticated, but largely inflexible, superficial and argumentative. Army Officer. Cambridge graduate.

No. 7. Likeable, approachable, with tact and charm. Apt to be self-indulgent and sulks when in difficulties. Public School. Naval Officer.

No. 8 (F). A spirited and highly sophisticated woman, with considerable poise and self-assurance. But impulsive and tends to make things difficult for herself. Private boarding School.

No. 9 (F). Quick, active-minded, cheerful and an indefatigable worker. Stable, mature, but with little real ability. Grammar School type. Intelligence Officer with S. African Army.

No. 10. Shy, unsettled, dreamer, with considerable anxiety and confusion; restless and in low spirits. B.A. (Durham). R.A.F. Sergeant.

No. 11. Dull, practical, formal, correct, stupid, with no outstanding capabilities. Public School. Naval Officer.

No. 12. Serious-minded, rather pompous, stand-offish. Is "dull," unresponsive, inflexible, lacks spontaneity and drive. R.A.F. Officer. Public School. Up at Cambridge.

No. 13. Bland, affable, bewildered, can't concentrate, but good-natured in an expressionless way. Public school. Educated overseas.

No. 14. Hearty, boisterous, warm-hearted, simple-minded and honest, but a bore, and dull. Hobby, Scouting. Grammar School. Army Officer.

No. 15. Very shy, unobservant, and extremely uncertain of himself. Affable, but very immature. Educated in colonies.

No. 16. Inflexible, tactless, stubborn, pedantic, and opinionated. Æsthetical in a hidebound fashion. Most intelligent and able. Grammar School. Naval Officer.

No. 17. Seriously inhibited with many pathological indications. His wife "wonders what has happened to him recently." Public School. R.A.F. Officer.

No. 18. Inadequate, shy, childishly impulsive. But otherwise a "nice" fellow. Grammar School. Officer.

No. 19. Undisciplined, blunt, with hysterical features. Elementary school and London evening class education: R.A.F. Officer with D.F.C. Has had no formal training since he was fifteen. He learnt to fly much as a boy learns to cycle.

No. 20. A plodder, obsessional in type, over-critical and a grumbler. A hard worker. Bumptious and slow to make up his mind. London Secondary School. Reserved occupation during war.

No. 21. Pleasant, nice fellow with fine manners but no poise. Lacking in drive. Prosaic and rigid in thinking. Army Officer. Oxford graduate.

No. 22. Able, sophisticated, but effeminate and highly impulsive. R.A.F. Officer. Cambridge graduate.

No. 23 (F). Suspicious, warped, very prim and proper, lacks fine qualities. Building up a defensive character, with delusional substratum. Grammar School. Oxford graduate.

No. 24 (F). Elemental and unformed. Jewess with healthy enough instincts, shrewd, but at a rather crude level. Secondary School. Oxford graduate.

Of the graduates, four or five show up well for personality, but as many make a poor showing. There can be no doubt, however, about a very considerable general agreement between the results of the interview and Rorschach testing and the suitability or unsuitability of these applicants for appointments at this particular agency. The only candidates with sound intelligence and ability, and maturing personalities at the same time, are the first four. The weak qualities of the men whose GVK-scores are less than eighty are particularly worth noting, as are the positive qualities (even if they are unpleasant or adverse) of most of the applicants whose GVK scores are ninety or more. There is nothing weak about No. 16—but he's insufferable.

It is interesting that few of these applicants had any noticeable special aptitudes except No. 10 and No. 24, who had each a flair for modern languages, and No. 4 who may have some literary ability, although I was unable to test him for this.* But candidates Nos. 1, 2, 3, and several others have high intelligence, shown by GVK and Rorschach tests alike, and good all-round ability; yet none of the candidates had gained a "First" at the University: all were "Thirds" except Nos. 4 and 10, who gained "Seconds."

---

* I have a test suitable for the purpose, for sampling craftsmanship as a writer, and meant for prospective copywriters.

It is worth glancing a little closer at candidate No. 2. A superior product of a Secondary School, she gained a scholarship to a select women's college at Cambridge. But she studied Geography, and got a "Third" in her finals. According to the Rorschach she is richly endowed emotionally, as indeed appears from her exuberance and popularity. She is very intelligent, initially of good promise. Yet her present interests are in home cooking, which she "adores"; she hasn't a single well-directed viewpoint about the world at large—she has stopped developing intellectually. There is no character structure to support her, no ideals to give her the kind of values and sophistication that would make her creative, intellectually interesting, fascinating. She will end up, one can see it, the willowy wife of a city clerk, a plebeian of the suburbs, becoming less and less the positive creature of her early promise. Is anything to blame for it? In my view she lacks the character that schools and home could have given to her: she lacks loyalties and viewpoints and any worthy ideal. But she was also too all-round in ability, with no special aptitude except her good spirits on which to fasten and direct her life; and temperamentally she undoubtedly commanded a good time, and was attractive enough always to get it. Even so, there must surely be added to the principle of "need" satisfaction outlined in Chapter I another, which says that there can be no excuse for not supporting and fashioning a person's potentialities as far as possible through character training.

But each of these twenty-four men and women is as interesting in one way or another as this young woman. No 24, for example, is a rough, crude diamond that sparkles on the dance floors of second-rate social clubs in London; she knows every dance-band leader within ear-shot. Voluble and emotional, she too has wasted the time of Dons at Oxford. She passed in, because of her gift, a modest one, in Modern Languages: but she is fundamentally uncultured, and as unculturable as the mountains, a woman with a childish special ability without the possibility of poise, discernment, or any of the finer feelings and sensibilities. No institutions would profit more from the psychologists' selections than the Universities, I fancy, especially the great ones. And, clearly, neither general ability alone, nor special abilities, are sufficient in themselves as a basis of selection. But my impression is that schools and homes are amiss in the case of the able men and women who don't reach the kind of acceptability that their initial ability would have led one to expect; the harsh, negative, warped, or other personality qualities of these bright grown-ups, their lack of wider interests and sound attitudes of mind, could have been obviated. But the rot is very deep indeed in the case of those whose ability, as shown by GVK-tests, is relatively low.

As for the twenty-five eleven-year-olds: much the same conclusion holds true for these. Boys who are weak in general ability are weak in personality, as though intelligence (especially G) is essential for integration. Those of high general ability may or may not have satisfactory personal qualities, but whatever they are, they are rarely negative, effete, or weak. But I can offer no validation as to the outcome of these latter, except to say from one's general psychological experience that it is hard to believe that many of these "difficult" but able boys will turn out any better than the men in the above list who were rejected on very general grounds by five Directors and myself, unless steps are taken to remedy their individual and social stresses. General ability, then, counts, for soundness of personality no less than for purely intellectual matters. One final piece of evidence for a relationship between general ability and personality may be worth noting: men who score much higher on V than on G and K (and therefore gain scores which are typical of women on the average), tend to be effeminate in some way—whether they simper, twitter, are coy, or are merely gently over-refined and orchid-like!

But tangible personal qualities count most of all. Our educational advisers seek, in this connection, to select children for their potentiality as "leaders," and, for Public Schools in particular, have in mind leadership in the social rather than any intellectual sense. If selection is ever based consistently on social leadership the consequences could be disastrous. Lord Moran, in his *Anatomy of Courage*, tells us of an officer who was too stupid to fear anything or anybody and who led bravely on this account. Leadership is by persuasion and suggestion, no less than by social dominance and physical presence and manners, and Public Schools would soon fall into disrepute if their choices fell primarily on youths who in due course will make ideal subalterns, but whose dullness of mind fits them for no higher rank. The kind of steadiness that makes a boy a good prefect is only one of many ways in which the expressive personality fulfils itself: and the good prefect may in fact be torn and warped in almost every other feature of his nature. Personality is far more than "leadership," and should be judged essentially from the standpoint of whether the person is expressing his or her emotional and temperamental qualities in a maturing, unconstricted fashion. It is far more, too, than being domineering, enthusiastic, and not insipid in manner or weak-chinned. Professor G. H. Thomson, the eminent educationist, has more than a regard for the view that personality is the sort of thing that enables one woman to go into a shop and get something from under the counter that others can't get; still better is the personality that is offered the something without self-display; and better still one who would neither insinuate nor accept such favours.

One or two main conclusions stand out. The mass testing of children is sound enough, provided its limitations are understood, and provided psychologists make and study the tests. The more individual assessment of children is an expert's business. Behind both there should be principles on which to guide everyone concerned. I have drawn attention to one, that no child can profit adequately at school whose deeper needs are unsatisfied. Character development, we aver, must be every school's objective, through service and sentiment formation, by giving purposes to life; intelligence is every school's concern, to be trained by hard work and disciplined thinking; and expressiveness—perhaps what many would call a sense of beauty—the root of creative and forward-looking impulses, is choicest of all, to be achieved by frank feeling and long-continued educational effort to reach a sense of the values and sensibilities of life. Selection (by which I mean all aspects of choosing, allocating, or guiding children by mental test and related psychological techniques) is an easy matter if character is the aim of education, for almost any child is as good as any other potentially in this respect.

As for intelligence, this is an empty concept in itself, which we don't even measure in practice: it should be replaced by Galton's notion of natural ability with zest and honest endeavour at its roots, and this, I believe, we measure to a considerable extent with suitable tests of ability. Expressiveness is a more difficult matter to assess, and although it is within our reach, and is intimately related to need-satisfaction and personality as a whole, the psychologist cannot hope to do much about it by mass testing methods until the seeds of culture have been more widely sown in the community's homes and schools. Even so, ability and aptitude alone are inadequate as a basis of selection and they must be supported by some account of the child's growing personality. My advice is that this cannot be left to the divination of teachers, however experienced and well-meaning they may be, but is a matter primarily for the psychologist, and not for any, but only for those trained in clinical mental testing as well as in the methods of group testing.

BOOKS, ETC., REFERRED TO IN THE TEXT

Bowley, A. H.: "A Study of the Factors influencing the General Development of the Child during the Pre-school Years, by means of Record Cards." *Brit. J. Psych. Monog. Supp.*, VIII, No. 25, 1942.

Burt, C.: "Symposium on the Selection of Pupils for Different Types of Secondary Schools. I, A General Survey." *Brit. J. Ed. Psych.*, 16, 1947.

Fleming Report. *H.M. Stationery Office.* 1944.

Freud, S.: *Leonardo da Vinci: a Study in Psychosexuality.* 1910.

Galton, F.: *Inquiries into Human Faculty.* 1883.

Line, W.: *The Growth of Visual Perception in Children.* 1930.

McClelland, W.: *Selection for Secondary Education.* 1942.

Ministry of Education: *The Nation's Schools.* 1945.

Moran, Lord: *Anatomy of Courage.* 1945.

Norwood Report. *H.M. Stationery Office.* 1943.

Rapaport, D.: *Diagnostic Psychological Testing.* 1945.

Rorschach, H.: *Psychodiagnostik.* 1921.

Rowse, A. L.: *The Spirit of English History.* 1944.

Sitwell, E.: *Fanfare for Elizabeth.* 1946.

Spearman, C.: *The Nature of Intelligence.* 1923.

Spencer, H.: *Principles of Psychology.* 1855.

Stephenson, W.: "Two Contributions to the Theory of Mental Testing. I." *Brit. J. Psych.*, 30 (i), 1939.

Wertheimer, M.: *Productive Thinking.* 1946.

APPENDIX I

SAMPLE G-, V-, and K-tests are appended, suitable for children in the ten- and eleven-year age-group. The G- and V-tests are straightforward enough, but liberties have been taken with the K-tests. The K-tests used in experimental studies require rather careful handling by the tester in order to obtain the best results, but, as this expertness cannot be guaranteed under normal school testing conditions I have had to give a somewhat empirical basis to the K-tests illustrated below: each includes elementary arithmetic. There is some evidence that arithmetical and spatial aptitudes are linked, and certainly the practical-minded person (e.g. the pattern-makers and carpenters) needs to be apt in both.

It is important to remember that any number of tests of these types can be made, and that no special significance attaches to these particular examples. Norms have not been provided because this would have added considerably to the length of this book, and it is doubtful whether proper use could be made of the norms by the average reader. Each test is printed in two parts for ease of application and to obviate fatigue; and each part consists of a four-page folder, quarto or foolscap, on the cover of which the initial instructions are printed. These instructions are the same for each of the six parts of the GVK set: they are printed only once here, prefacing the first of the G-tests. This particular set of GVK tests can be applied in one day's testing, in the following order, and with the times shown:

	9.20	Forepractice sheet	(5 minutes)
G — 1	9.35		(18 minutes)
K — 1	10.00		(35 minutes)
		Break	(20 minutes)
G — 2	10.55		(26 minutes)
V — 1	11.30		(32 minutes)
		Lunch	
K — 2	1.45		(36 minutes)
V — 2	2.30		(50 minutes)

The timing should be done with an ordinary watch with a seconds hand, reset as specified below. Before beginning the forepractice sheet the Invigilator resets his watch, when the seconds hand is nearing 60, so that the minute and hour hands are a small fraction of a minute before 12.00. He then waits until the seconds hand reaches 60, and just as it does so, with the other hands at 12.00, he starts with—

"READY . . . GO!" Subsequent timing is by schedule. The chief danger is that the Invigilator may become interested in a conversation, or have his attention directed away from the testing, so that he accidentally oversteps the time limit. This must not occur. The words "READY . . . OVER!" should always be read as the seconds hand reaches 60; and similarly for the command "STOP!" If stop-watches are used, care must be taken to see that they are accurate timepieces, and that the Invigilators are familiar with their use.

Where "creative" answers are involved, as in test V-2, the marking is best done by two experts (to check one another), who have had some training in the psycho-physical methods: the papers are scored one question at a time, putting into separate piles the answers to which it is proposed to give 0, 1, 2, 3 . . . marks. It is easy in this way to keep an eye on the distribution of proposed marks for each question, and salutary to look again at all the answers to which the same score has been provisionally allotted—re-reading usually shows clearly that some deserve upgrading, and others the reverse.

For qualitative testing of a child I use a set of Q-boards of the kind described in Chapter VII. Many other performance series of this kind have been constructed, and a different one can be made available each year if need be.

The Rorschach is applied and interpreted only by the psychologist who has wide psychological experience and clinical training. The child takes each blot in turn and says what he sees there. Later, the responses are analysed (i) for their *location* on the blot, (ii) for what apparently *determined* them, and (iii) for their *content*. Whether the responses involve the whole blot (W), or a coherent part (D), or detailed pieces only (*d*) gives information about the child's level and type of intelligence, and about his abstractive and generalising potentialities: all this and much else derives from location analysis. Amongst the determinants are movement concepts (M, Fm, m), transparency and vista responses (K, FK), touch and surface texture (Fc, c) and achromatic (C′); finally, those which involve the use of colour (FC, CF, C). All these supply special information about the child—the movement responses about his emotional endowment, those of a vista kind about his sublimating tendencies, the touch responses about his *rapport*, and the colour responses about his reality-sense (extroversion). But in all cases it is the existing condition of the child's personality that is involved, and the "interpretations" can usually be confirmed, as far as the main trends are concerned, from the subject's history or by judicious interviewing directed towards his attitudes and interests.

A copy of a Poetry-Writing Test is added, but without norms. Much depends upon the marking scheme adopted; but marked on the lines referred to in Chapter VI, this test served objectively as satisfactorily as V-2, and is qualitatively more interesting.

DO NOT OPEN THIS BOOK UNTIL YOU ARE TOLD TO

You will find in this book a number of questions which you must answer as quickly as you can.

If a question is too difficult pass on to the next one.

Ask no questions of anyone.

Write in pencil.

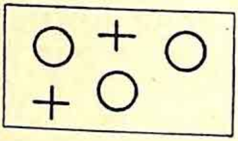
WAIT FOR THE SIGNAL BEFORE OPENING THE BOOK

When the signal is given, open the book,
and begin at question No. 1.

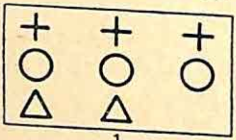
WORK AS QUICKLY AS YOU CAN

TEST G-1

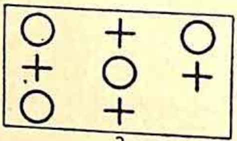
DRAW in quickly the missing part in the following drawing:



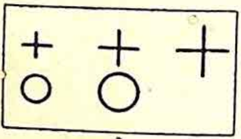
Now fill in the missing part in each of the following:



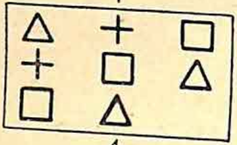
1



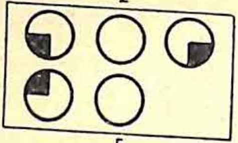
2



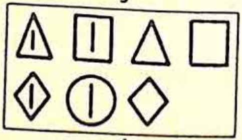
3



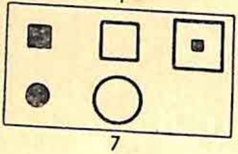
4



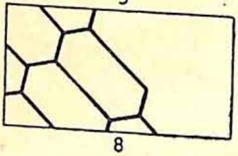
5



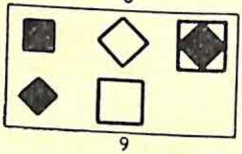
6



7

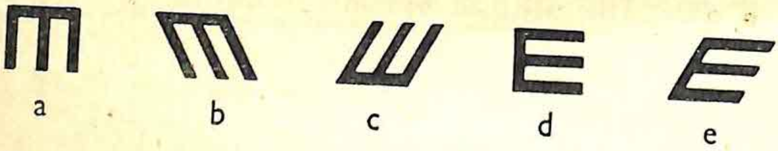


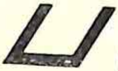
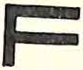
8



9

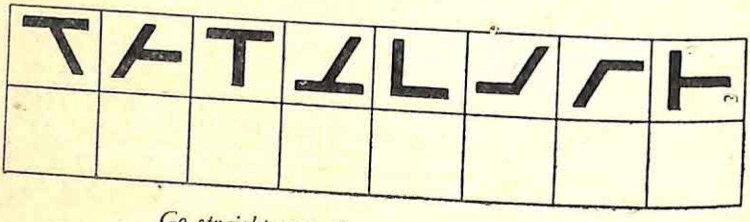
Here is a secret code:



When the code is used, only PART of each drawing is printed: thus  is c  is d

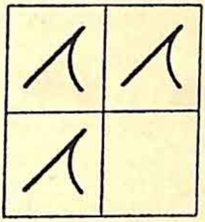
What letters do these parts stand for ?

Answers:

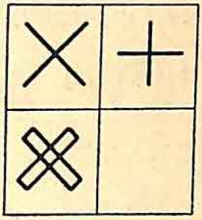


Go straight on to the next page.

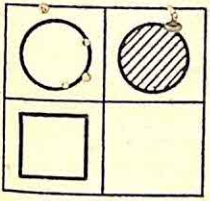
The CORNER *right-hand square in each question is* BLANK. *Draw quickly in that space the pattern that you think should be there.*



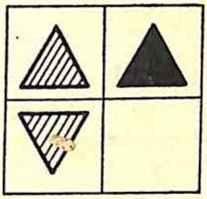
1



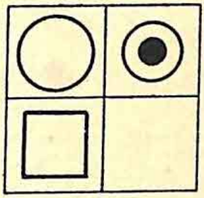
2



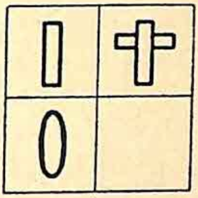
3



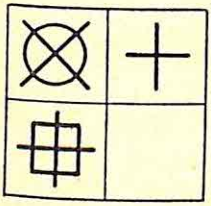
4



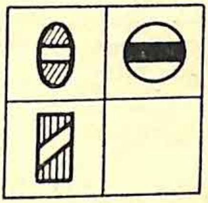
5



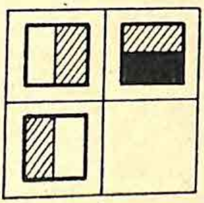
6



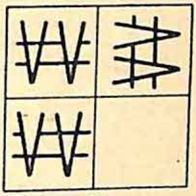
7



8

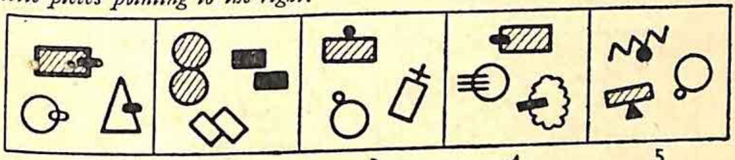


9

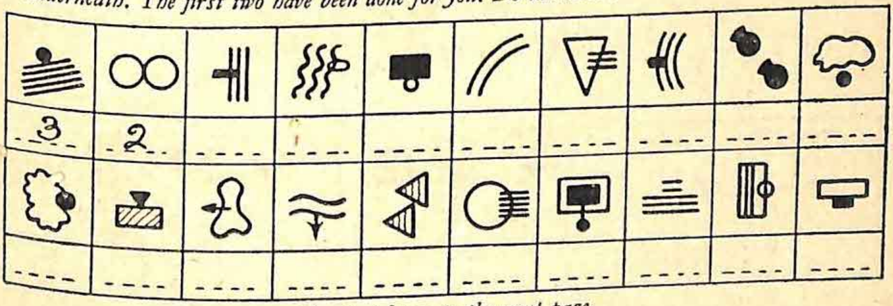


10

The three drawings in each of the squares marked 1 *to* 5 *are alike in a certain way. Find how each three in a square are alike. Thus, those in the first box are all alike because they have little pieces pointing to the right.*



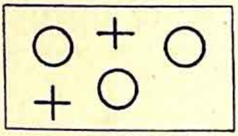
Now find to which square each of the following drawings belongs, and write its number underneath. The first two have been done for you. Do the others:



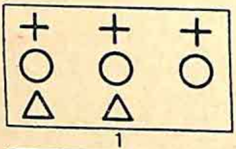
Go straight on to the next page.

TEST G-1

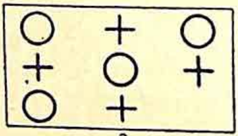
DRAW in quickly the missing part in the following drawing:



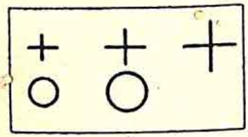
Now fill in the missing part in each of the following:



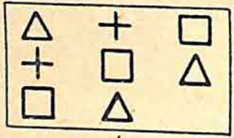
1



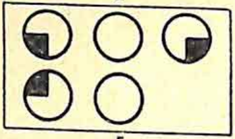
2



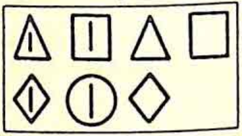
3



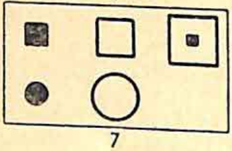
4



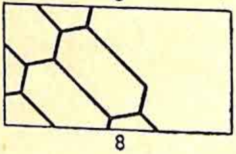
5



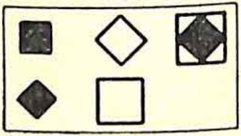
6



7

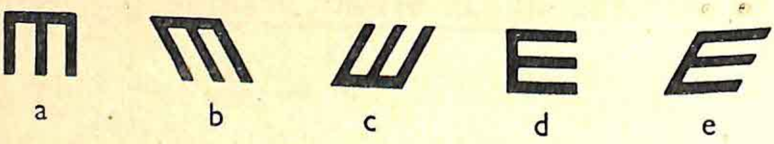


8

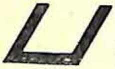
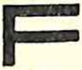


9

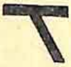
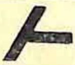
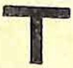
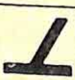
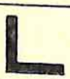
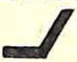
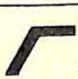
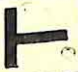
Here is a secret code:



When the code is used, only PART of each drawing is printed: thus

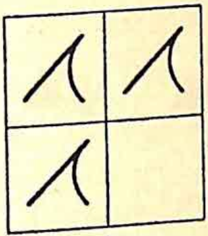
 is c  is d

What letters do these parts stand for ?

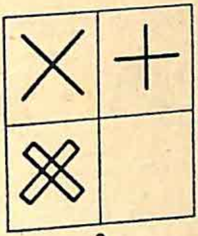
								
Answers:								

Go straight on to the next page.

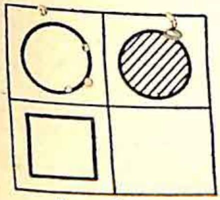
The CORNER *right-hand square in each question is* BLANK. *Draw quickly in that space the pattern that you think should be there.*



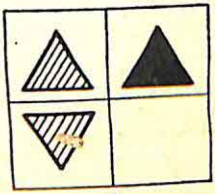
1



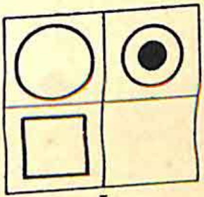
2



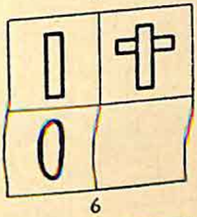
3



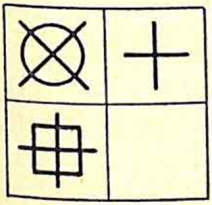
4



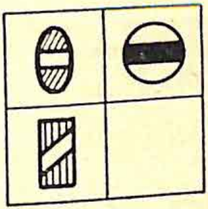
5



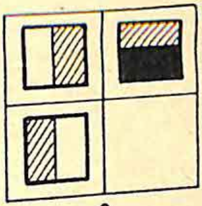
6



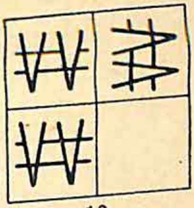
7



8

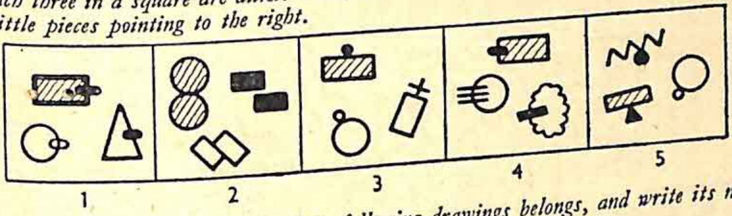


9

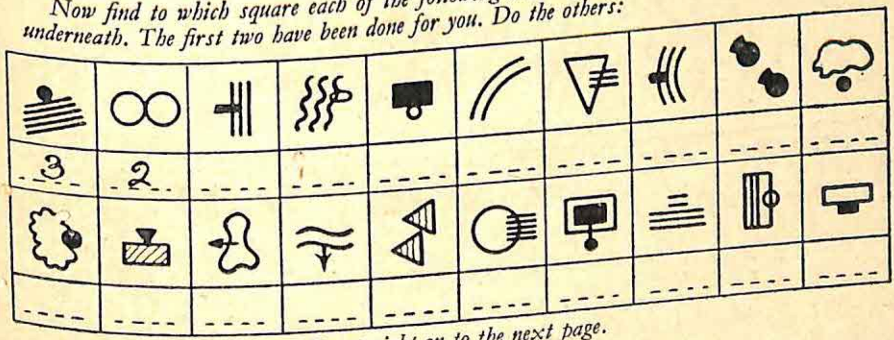


10

The three drawings in each of the squares marked 1 *to* 5 *are alike in a certain way. Find how each three in a square are alike. Thus, those in the first box are all alike because they have little pieces pointing to the right.*



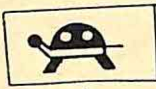
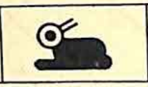
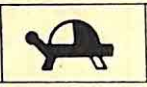
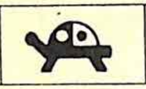
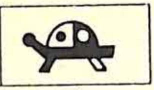
Now find to which square each of the following drawings belongs, and write its number underneath. The first two have been done for you. Do the others:



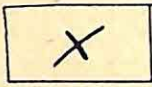
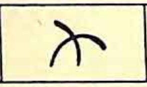
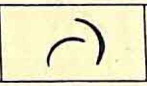
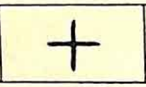
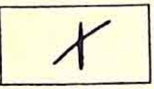
Go straight on to the next page.

Find the "ODD" drawing in each row.

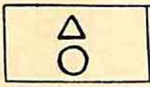
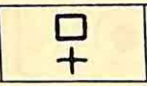
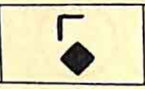
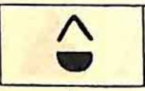
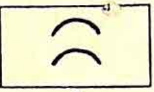
Write its number here:


1

2

3

4

5

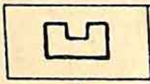
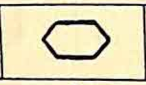
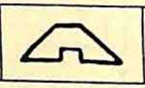
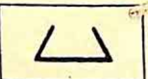
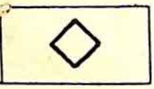
No. . . . .


1

2

3

4

5

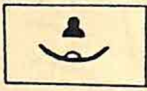
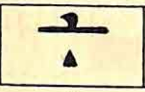
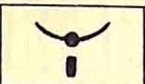
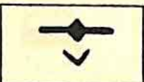
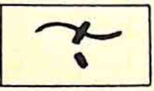
No. . . . .


1

2

3

4

5

No. . . . .

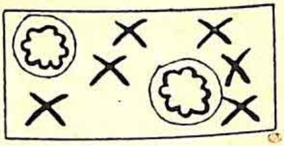

1

2

3

4

5

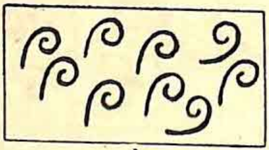
No. . . . .

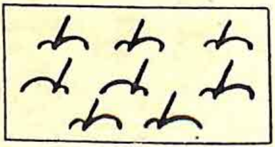

1

2

3

4

5

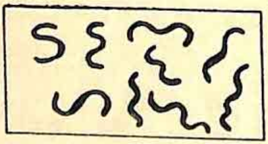
No. . . . .

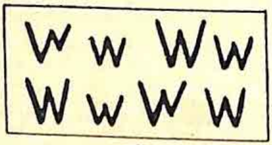
In each of these questions all but TWO of the small drawings are alike in some way. Find the TWO which are not like all the others, and draw a ring round them. The first question is done for you already.

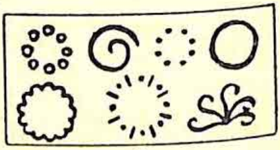


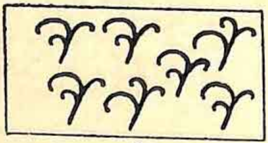

1

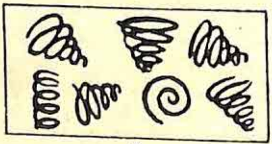

2

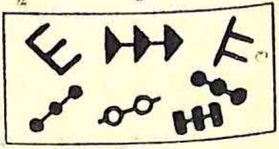

3


4


5

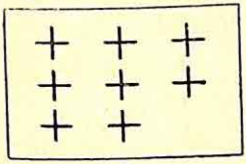

6


7

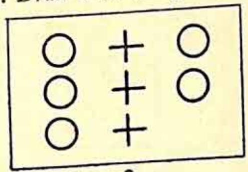

8

Look over your work.

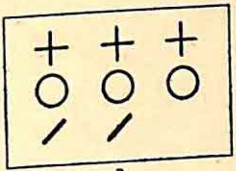
Part of each of these patterns is MISSING. Draw in the missing piece. (Thus in the first question a cross is missing. Draw it in the space.)



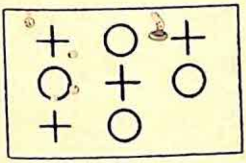
1



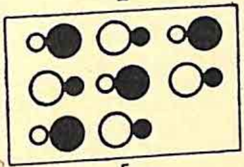
2



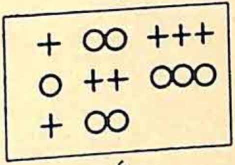
3



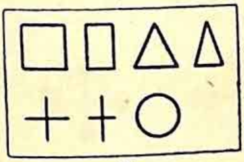
4



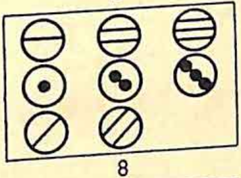
5



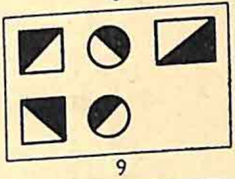
6



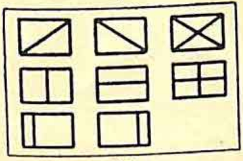
7



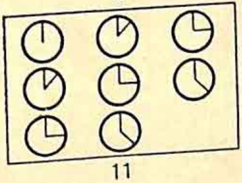
8



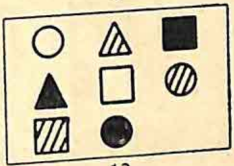
9



10

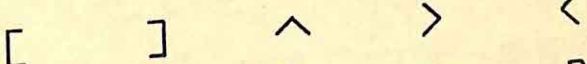


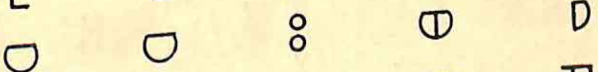
11

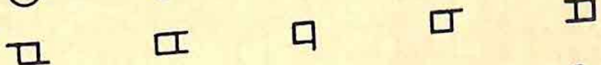


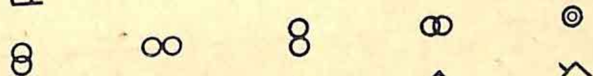
12

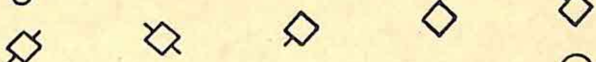
Which is the "odd" drawing in each of the following questions? Four of the five drawings are more like each other than they are like the other odd one. Find the drawing which is most unlike the other four and underline it.

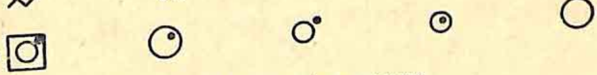
1 

2 

3 

4 

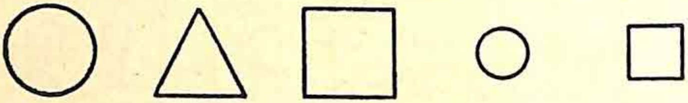
5 

6 

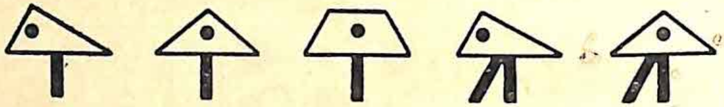
Go straight on to the next page.

In each of the following questions TWO of the drawings are alike, and TWO others are also alike, but in a different way. UNDERLINE *the* ONE *drawing that doesn't belong to either of the other two pairs.*

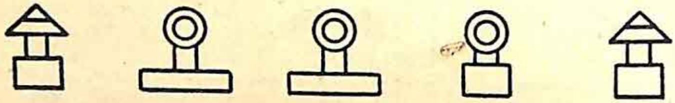
1



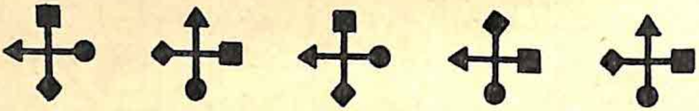
2



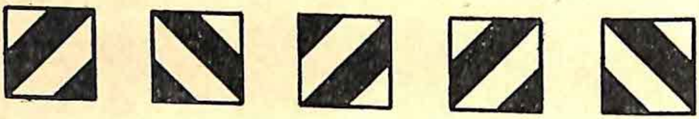
3



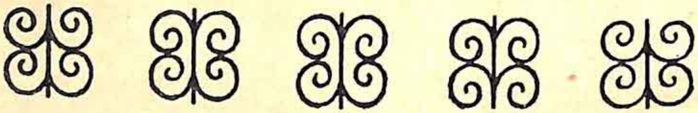
4



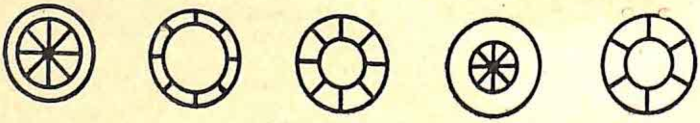
5



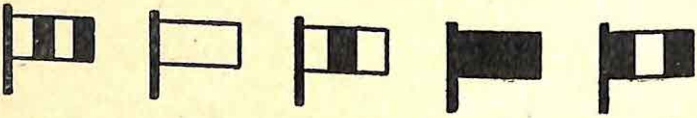
6



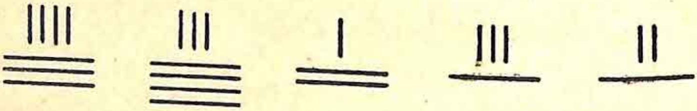
7



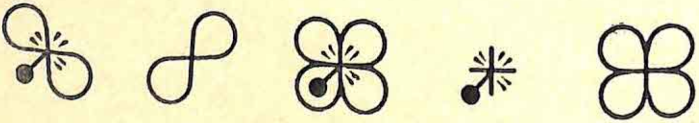
8



9



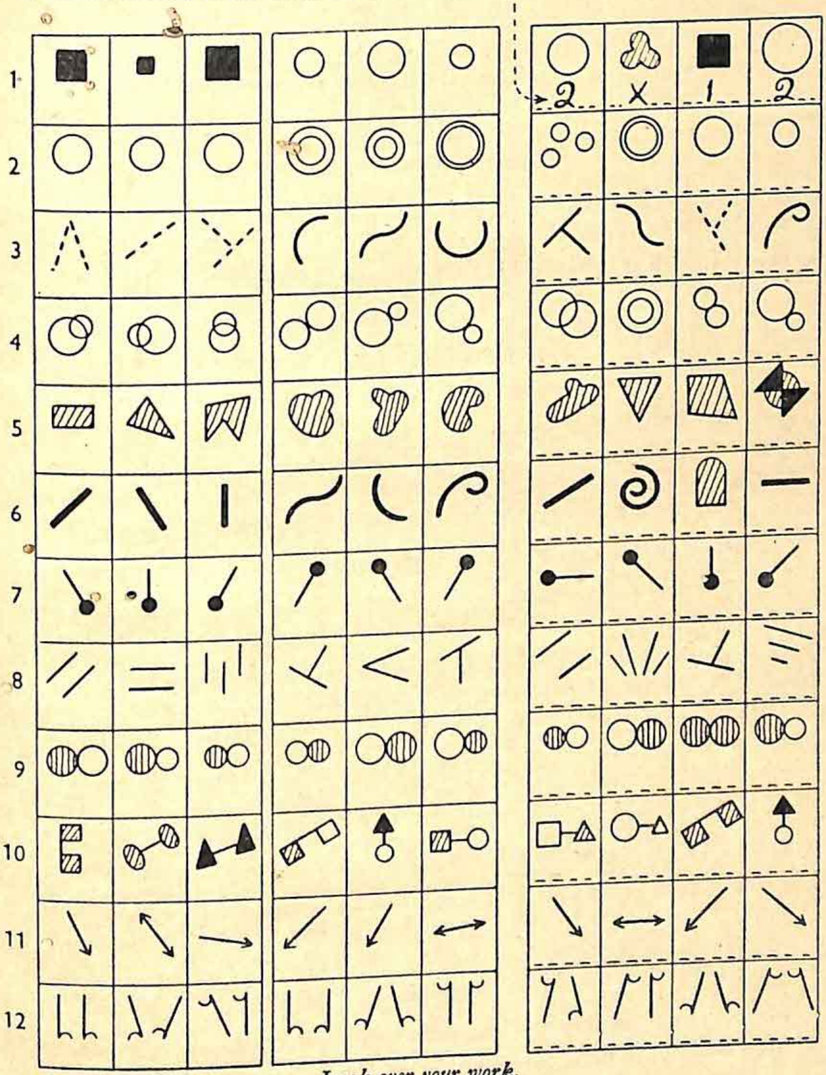
10



Go straight on to the next page.

In each of the following questions the FIRST THREE *drawings are alike in some way. The next three are also alike.*

Find how the first three are alike.
Find how the second three are alike.
Now look at the FOUR *drawings at the end of each question:*
Put a "1" *under any which belong to the* FIRST THREE;
Put a "2" *under any which belong to the* NEXT THREE;
Put a "x" *under any that belong to neither.*
Thus in question No. 1 *the answers are* 2, x, 1, 2 *respectively.*
Write the answers on the dotted line at the right.



Look over your work.

TEST V-1

DO what each of the following questions asks you to do:

1. Cross out the last word in this sentence.

2. Cross out all the lines which have no letters underneath: | | | | | |
a b c

3. Underline the letter which would come at the beginning if the following letters were arranged in alphabetical order:

R W Z D K H

4. Add a cross to make the two rows equal, and if this makes an even number of crosses altogether, cross out the top row of crosses:

× × × ×
× × ×

Four of the five words in a row are alike in some way. Which is the word that is NOT like the other four? UNDERLINE *it. The first one has been done for you:*

Example: 5.	silver	gold	copper	coal	lead
6.	trot	run	walk	stand	stroll
7.	fresh	young	recent	new	old
8.	robin	canary	starling	sparrow	lark
9.	sink	decay	droop	tap	fade
10.	far	distant	away	remote	familiar
11.	master	control	curb	pupil	govern
12.	kindly	jealous	annoyed	angry	envious
13.	object	idea	fancy	dream	thought

Four of the five PAIRS *of words in the following questions are alike in some way. Which* PAIR *is* NOT *like the other four?* UNDERLINE *it: the first one has been done for you:*

14.	cat rat	hen pen	now then	car tar	cub tub
15.	hen crow	stone brick	cow pig	dog horse	mouse rat
16.	press push	rush squash	bash bang	speak talk	thrust squeeze
17.	save rescue	heal give	cheat defraud	befriend help	love protect
18.	probe enquire	prod thrust	examine look into	penetrate sound	explode reveal

UNDERLINE *the one word of the five at the right which best completes the idea (the first is done for you):*

1. drink : thirst :: eat . . . . . food hunger bread cooking full
2. sink : heavy :: float . . . . ship water light calm shallow
3. cold : draught :: measles . . . ill doctor nurse germs medicine
4. brain : thought :: muscle. . . arm body tired nerve movement
5. match : flame :: jealousy . . . pain envy lover friend zealous
6. colours : light :: tones . . . violin voice sound tune pitch
7. blush : shame :: shiver . . . life cold shy ice cheek
8. acquittal : innocence :: conviction guilt error police reason court
9. enquiry : curiosity :: disregard . fail candour regard curious indifference

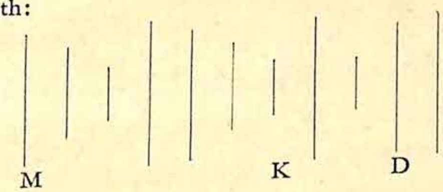
bite chew eat	duel fight battle	soar top above	involved maze tangle
1	2	3	4

10–21. The words in each box (above) are alike in some way. Thus, the words in box 1 all concern the act of eating. Into which box would you place each of the following words?

(*Write the number of the box on the dotted line at the side of the word. The first has been done already.*)

war . . . . .2. . confused . . . . upwards . . . . drink . . . .
complex . . . . balloon . . . . digest . . . . climb . . . .
lick . . . . dispute . . . . muddle . . . . wrestle . . . .

22. Cross out the five shortest lines from the following, not counting those with a letter underneath:



Write your answer here:

The following words are in pairs:

	1	2	3	4	5	
23.	cat elephant	dust mountain	tin-can gasometer	needle pin	hut castle	. . . .

Four of these pairs of words are alike in some way: which one pair is unlike the other four? Write its number in the space at the right.

Do the other questions below in the same way:

	1	2	3	4	5	
24.	match fire	petrol motor	coal engine	push pram	fire fire-engine	. . . .
25.	wing bird	point pin	finger arm	leaf book	leg arm	. . . .

WRITE ONE WORD at the end of each line to complete the sentence. The first one has been done for you.

26. People are to Homes as Birds are to ....NESTS....

27. Coal is to Miner as Corn is to....................

28. Ice is to Solid as Water is to....................

29. Fur is to Animal as Feathers are to....................

30. Branch is to Tree as Arm is to....................

31. Sky is to Stars as City is to....................

UNDERLINE the one word of the five words at the right which best completes the sentence:

32. Withdraw is to Pursue as Stop is to. withold occupy end refrain continue

33. Tandem is to Bicycle as Double is to. two single tricycle car tyres

34. Rest is to Sleep as Reverie is to . night dream daydream snore laze

35. Air is to Invisible as Milk is to . food drink opaque pint cream

36. Tyrant is to Cruel as Benefactor is to helpful factory villain hero wealth

End each of the following sentences with an interesting phrase. The first two have been done for you as examples of the kind of phrases which will score highly; now do the others. (You must fill the gaps with a short phrase and not with one word only.)

In the square the old wives cried their wares, like ..QUEER DAY OWLS..

Yes, wander to those hills that glow like ..STRANGE SAD JEWELS..

37. The sea breaks into billows pale as the....................

38. The blue sky shimmered deep above me, and I sang like a....................

39. The singing and laughing of the wicked men was as hollow as....................

40. I saw Night, striding like a....................

41. The hill-tops were pale, like....................

42. The fern trembled in my hands, as does a....................

43. The shadow of the flute-player on the wall was as fitful as....................

44. In my imagination the idea died like the....................

In the following questions write an S between the words if they have nearly the SAME meaning, and an O if they mean the OPPOSITE. Question 20 is done as an example.

45. black....**O**....white....**S**....light....**O**....dark....**S**....dull

46. grim........stern........bow........knot........untie

47. crude........coarse........fine........sunny........stormy

48. linger........loiter........hurry........rest........relax

49. excess........surplus........extra........ordinary........usual

50. gather........scatter........spread........condense........expand

TEST V-2

Answer the following questions as quickly as you can:

OPPOSITES

1. What is the opposite of EMPTY? Answer here................
2. What is the opposite of DEAD? Answer here................
3. What word begins with D and means the opposite of BRIGHT?...........
4. What word begins with S and means the opposite of ROUGH? ....
5. What word begins with G and means the opposite of RECEIVE?.........

SIMILARS

6. What word begins with I and means the same as BABY? ....
7. What word begins with A and means the same as HELP? ....
8. What word begins with T and means the same as SPEAK? ....
9. What word begins with C and means the same as ARTFUL? ....
10. What word begins with D and means the same as TRICK? ....

QUESTIONS

11. Which one of the following words: *jump, fly, rest, run, swim, crawl,* is opposite in meaning to the others? ....
12. Here are seven words: Cross out *two pairs* of opposites:
    real cloudy fairy weather clear artificial game
13. What is the opposite of KINDNESS? ....
14. What is the opposite of ENTRANCE? ....
15. Cross out the one word that is unlike all the others in meaning:
    clang, bang, whirr, buzz, whine, band

SENTENCES

ONE *word is missing in each of the following sentences. Write the word on the dotted line:*

16. It was difficult to....................who was first in the race.
17. The countryside is....................when the sun shines.
18. He had a heart of stone, and refused to....................his victims.
19. He took a seat and amused himself by looking at the.................... and furniture.
20. When we make friendships we should do our....................to keep them.

Read the following verse of poetry and then answer the questions about it:

Fall, leaves, fall; die, flowers, away;
Lengthen night and shorten day:
Every leaf speaks bliss to me,
Fluttering from the autumn tree:
I shall smile when wreathes of snow
Blossom where the rose shall grow:
I shall sing when night's decay
Ushers in the drearier day.

21. Which of the seasons does this poet appear to like best?..............

22. What will blossom, according to the verse?..........................

23. What do you think "night's decay" means?..........................

24. What are "wreathes of snow" likely to be?..........................

SIMILARS

In each of the following, find a word beginning with the given CAPITAL letter that means the SAME as the given word. The first has been done for you.

Scorch (B)........*burn* ....

25. Gown (D) ....
26. Correct (R) ....
27. Numerous (M) ....
28. Drink (S) ....
29. Hatchet (A) ....
30. Puddle (P) ....
31. Emphasis (S) ....
32. Reproach (B) ....

The following poem is about an EAGLE. A word is missing wherever there is a dotted line. Fill in the missing words.

33. He clasps the crag with crooked....................
Close to the sun in lonely lands,

34. Ringed with the...................world he stands.
The wrinkled sea beneath him crawls,

35. He watches from his...................walls.

36. What is meant by "wrinkled sea" in the above poem? ....
....

37. What is meant by "close to the sun" in the poem? ....
....

38. What are the chief differences between *dogs* and *cats*?

....

....

....

....

39. Describe how you would stick a picture into a scrapbook.

....

....

....

....

40. A girl is talking to a friend about her goldfish. She begins by saying:

"Our fish is eight years old. That's what I was told, anyhow. All I know is that he is as white as snow, and he used to be quite different. Something funny happened. . . .

(Continue the girl's story.)

....

....

....

....

....

....

....

....

(You needn't finish the story.)

TEST K-1

1. *These blocks are all the same size. How many are there altogether?*

Answer......................

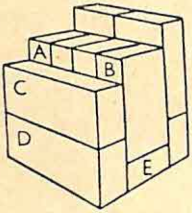
2. *These blocks are all the same size. Which block, A, B, C, D, or E, has* most *other blocks touching it?*

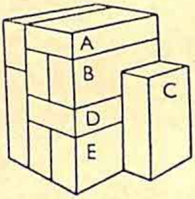
Answer......................

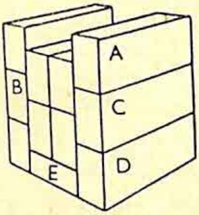
How many blocks touch it?........................

3. *These blocks are all the same size. How many blocks does* B *touch which* E *does not touch?*

Answer......................





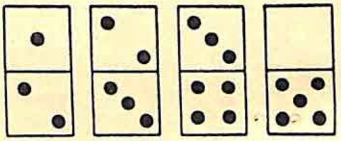


4. *Fill in the missing figures in the following subtraction sum:*

$$\begin{array}{cccc} 6 & .. & 4 & 3 \\ 2 & 6 & 5 & .. \\ \hline 3 & 8 & .. & 7 \end{array}$$

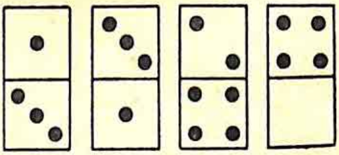
5. *The dominoes are in a special order. How many "spots" are missing from the top half of the last domino?*

Answer.............



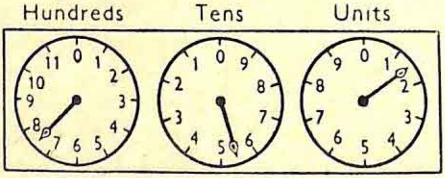
6. *How many "spots" are missing from the bottom half of the last domino?*

Answer.............



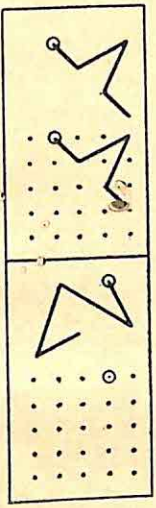
7. *This is an electric, or gas, or similar meter, reading "hundreds," "tens," and "units" on the three clocks. What is the reading on the meter?* (*Note carefully that the "tens" clock reads anti-clockwise.*)

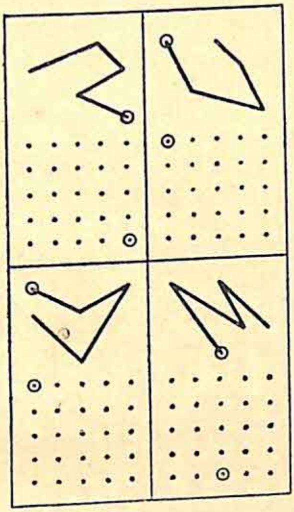
Answer.............

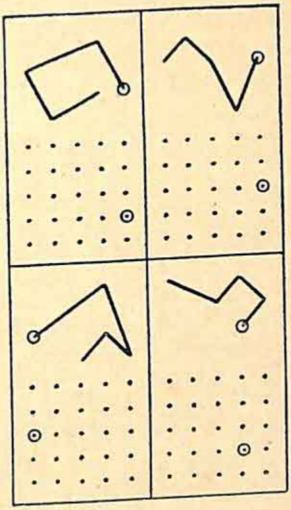


Go straight on to the next page.

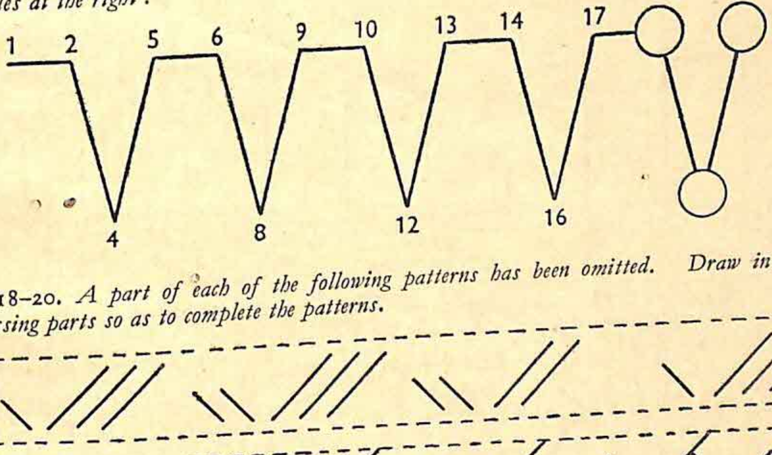
8–16. *Copy each of the following shapes exactly on the dotted space underneath it, beginning at the dot with the circle round it. (The first one is done for you.)*



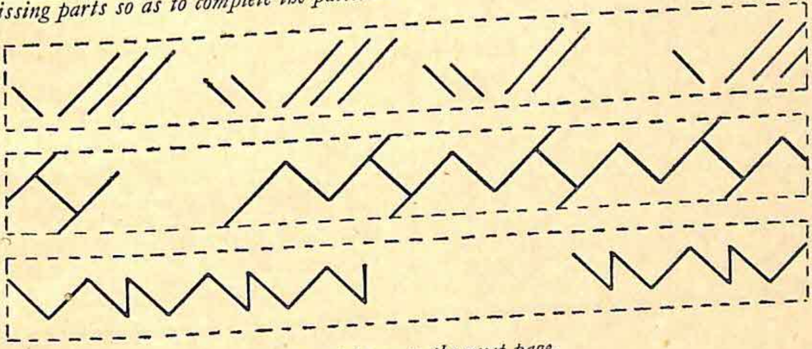




17. *What numbers should come next in the following series? Write the numbers in the circles at the right:*



18–20. *A part of each of the following patterns has been omitted. Draw in the missing parts so as to complete the patterns.*



Go straight on to the next page.

Where there is a dotted space in the following questions a number is missing. Write the missing number on the dotted line.

21. 24 × 1 12 × 2 8 × 3 6 × ......

22. 9 ÷ 3 12 ÷ 4 21 ÷ 7 36 ÷ ...... 15 ÷ 5

23. 13 14 16 19 28

24. 97 85 73 ......

25. even-17 odd-14 even-13 odd-10 even-......

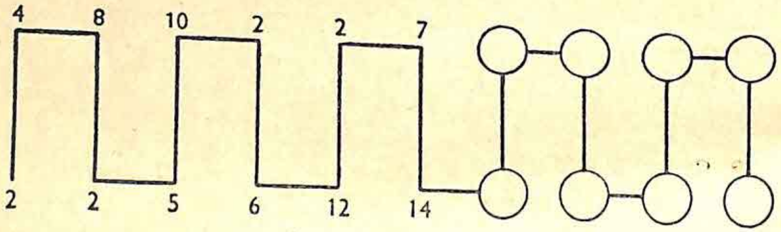
26–8. *Write the missing numbers in the following questions :*

2	5	9	14
3	7	12	18
4	9	15	

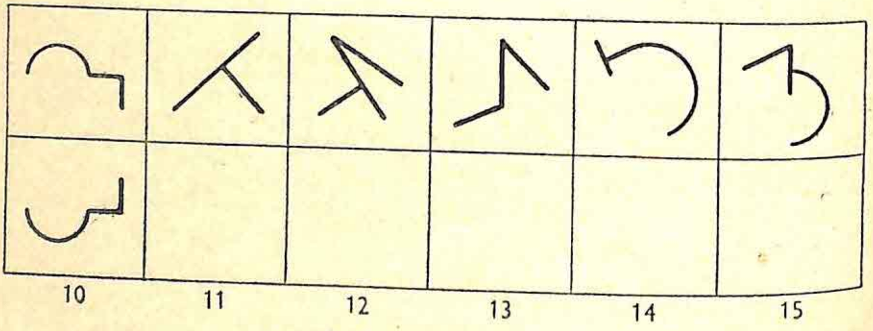
1	6	11	
5	11	17	23
10	17		

9	27	81
11	33	

29. *What numbers should come next in the following series? Write the numbers in the circles at the right :*



30–35. *Draw each of the following shapes UPSIDE-DOWN in the space below it. (The first one has been done for you already.)*



Look over your work.

TEST K-2

Answer the following questions quickly: *(Do your rough work in the margin.)*

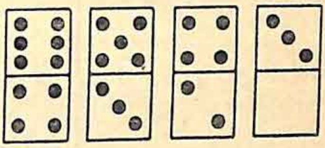
1. *Six sausages weigh* 1 *lb. What is the weight of* 33 *sausages?* *Answer.............*

2. *One and a half bars of chocolate weigh* 12 *ozs. What is the weight of half a bar?* *Answer.............*

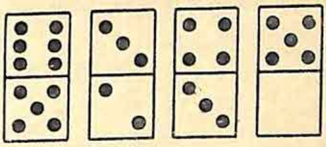
3. *What number should come next in the following list?*
35 35 31 31 27 27 23 *Answer.............*

4. *Instead of adding* 24, *a boy took away* 16 *and obtained* 10 *as his answer. What should the answer have been?* *Answer.............*

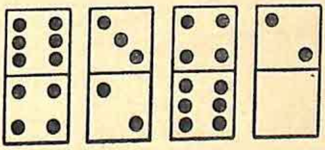
5. *The dominoes are in a special order. How many "spots" are missing from the bottom half of the last domino?*
Answer.............



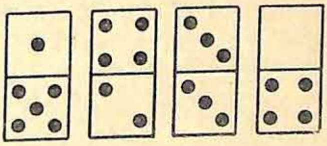
6. *How many "spots" are missing from the bottom half of the last domino?*
Answer.............



7. *How many "spots" are missing from the bottom half of the last domino?*
Answer.............

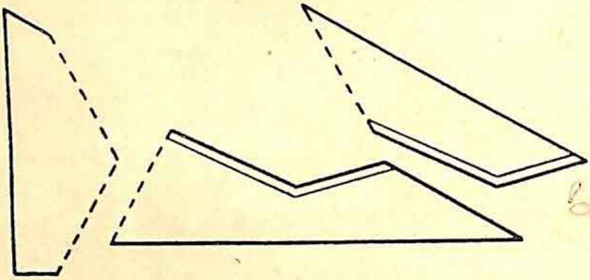


8. *How many "spots" are missing from the top half of the last domino?*
Answer.............

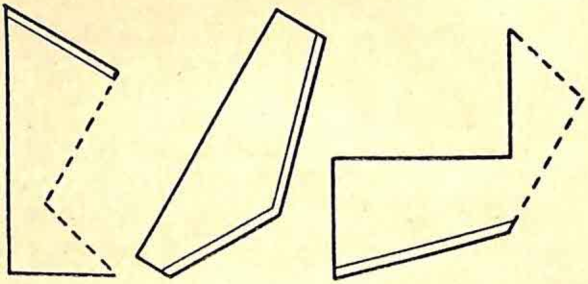


Go straight on to the next page.

9. *The following three pieces can fit together to make one large piece. The dotted lines fit together, and so do the double lines. What is the shape of the large piece?*



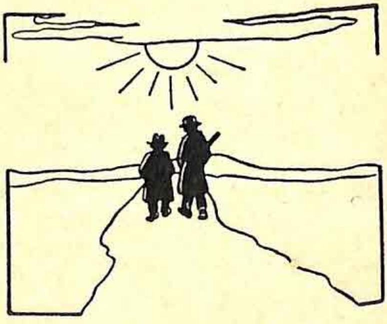
10. *If these three pieces are fitted together, what is the shape of the large piece? Draw it here:*



UNDERLINE *the "extra" number in each question. The first question has been done for you already:*

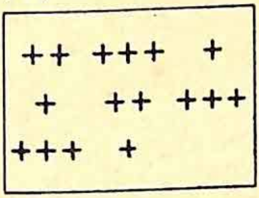
11.	2	4	$\underline{7}$	8	12
12.	5	9	11	6	13
13.	36	27	18	45	16
14.	35	21	27	56	12
15.	90	54	80	63	81

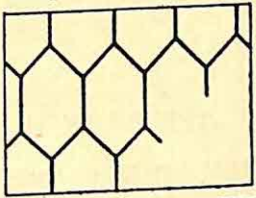
16. *Draw the shadows of these two men.*

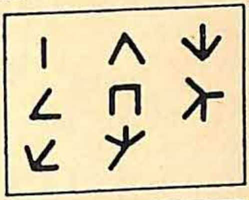


Go straight on to the next page.

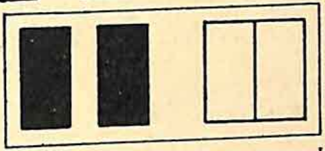
17–19. *Draw in the missing piece or pieces in the following questions:*





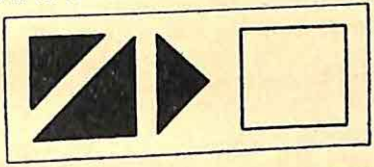


The two black pieces can be placed together to form the outline at the right (the square). A pencil line has been drawn to show how the two pieces can be placed so as to fit EXACTLY *on the square.*

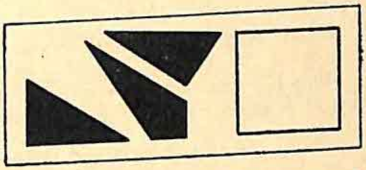


Now draw pencil lines in the white outlines below, to show how the black pieces can be placed so as to FIT *the outlines exactly.*

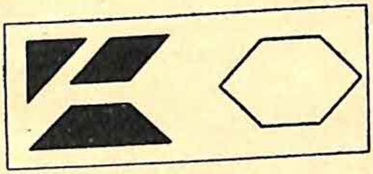
20



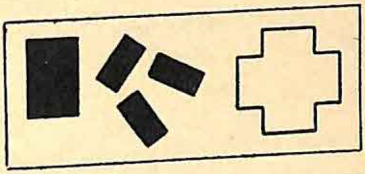
23



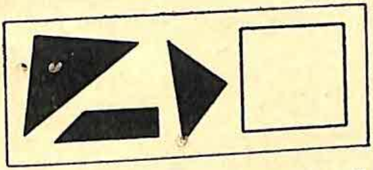
21



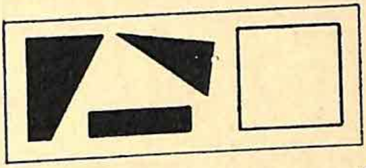
24



22

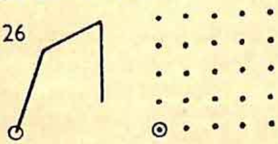


25

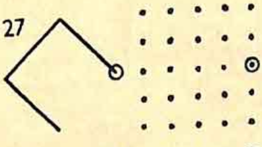


Copy each of the following shapes exactly on the dotted space beside it, beginning at the dot with the circle round it.

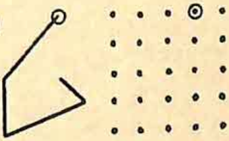
26



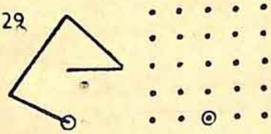
27



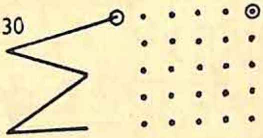
28



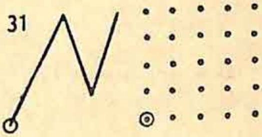
29



30



31



Look over your work.

APPENDIX II

POETRY COMPLETION TEST

Name..
(In full.)

Age.........*years*..........*months*. *School*..........................

Write here whether you are a BOY or GIRL..........................

Do not open this Test until you are told to do so.

This is a test of poetry-writing. You will be given part of a poem, and may be asked to make up one, or, perhaps, two or more lines to add to it.

Thus, you might be given the following piece of verse:

The King of China's daughter
So beautiful to see
....
....

(*Add two lines to continue this nursery rhyme.*)

Here, as you see, you have to write two lines of poetry to continue the nursery rhyme. One girl wrote down (after about a minute's thought and some rough work):

"Lived in a golden palace
Beside a silver sea."

You might end it differently, perhaps much better. Other poems in the test are quite different from this and need a different sort of treatment. But, in any case, what you write should be interesting and as vivid or as suitable as possible.

Consider each piece of poetry carefully, as if it were part of a poem which you yourself had just been making. Some of the verses may seem foolish to you, and others rather difficult. But try to enter into the spirit of each piece and complete it as well as you can. If you happen to know any of the poems, make a note beside it to say so. But add an original version of your own, all the same.

You will have 60 *minutes* for the test.

It is not essential for you to complete all the questions in this time. Probably you will not be able to do so. However, you should try to do as many as you can.

The questions may be answered in any order.

DO NOT TURN OVER UNTIL YOU ARE TOLD TO DO SO.

DO ALL WRITING IN PENCIL.

Rough paper is provided in case you wish to work over your poetry before copying it into the spaces marked in the test. This rough paper must be given in with the rest of the test.

1. Our fish is eight years old,
That's what I was told;
This is what I know:
He is as white as snow.
....
....
....
....

(This is part of a poem by a boy of nine. Add four lines.)

2. O parrot, thou hast grey feathers
Which thou peckest in all weathers,
And thy curled beak
Could make me squeak.
....
....
....
....

(Complete the poem by adding four more lines.)

3. Men cannot swim
As fishes do,
They only slam
A hard way through.
....
....
....
....

(Add a second verse of four lines.)

4. Julius Cæsar Pompey Green
Wore a jacket of velveteen
....
....

(Add two more lines to this nursery rhyme.)

5. Like a small grey
Coffee-pot
Sits the squirrel.
He is not
....
....
....
....

(Continue by adding FOUR short lines.)

6. Ho, all you cats in the street,
Look out, it's the time for meat!
The little barrow is crawling along
....
....
....

(Add three more lines.)

7. In Xmas lanes
The snow is falling:
Swirled off the leaden panes
The gusts go brawling;
And, in the moonlight,
Glistening, show
....
....

(Add two lines, to finish the poem.)

8. I saw old Autumn in the misty morn
....
....
....

(Add three lines to continue this opening.)

9. Shining like slugs,
The cars came fast;
Across the night
Their glances glowed;
With purring hearts
Approached and passed
....
....

(Finish this description of cars at night by adding two lines.)

10. When I am dead, my dearest,
Sing no sad songs for me;
Plant thou no roses at my head
Nor shady cypress tree;
....
....
....
....

(Add one more stanza.)

11. O they rode on, and on they rode,
And all by the light of the moon,
Until they came to a wan water
And there they gat them doon.
....
....
....
....

(Add a second stanza to continue the ballad.)

12. So through the darkness and the cold we flew,
And not a voice was idle; with the din
Smitten, the precipices rang aloud;
The leafless trees and every icy crag
Tinkled like iron; ....
....
....

(Add two and a half lines to this description of skating on a lake at midnight.)

13. O fair green-girdled mother of mine,
Sea, that art clothed with the wind and the rain,
....
....

(Continue, for two more lines, this address to the sea.)

14. Full of this whim was thoughtful Madeline,
The music yearning like a god in pain
She scarcely heard; her maiden eyes divine,
Fixed on the floor, saw many a sweeping train
....
....
....
....
....

(Add three or *four* or *five lines, to finish this description of a girl at a ball in a mediæval castle.)*

15. Whirl up, sea,
....
....
....
....
....

(Add five lines to finish this poem, preferably in "free" form, without rhyme.)

16. With Spanish yew so strong,
Arrows a cloth-yard long,
That like to serpents stung,
Piercing the weather:
....
....
....
....

(Finish the stanza in four lines.)

17. Care-charming sleep, thou easer of all woes,
Brother to death, sweetly thyself dispose
On this afflicted prince, fall like a cloud
In gentle showers; give nothing that is loud.
....
....
....
....

(Add four lines.)

18. From Carlisle southward run the railway lines
....
....
....

(Supposing this to be the opening of a long poem, add three lines.)

19. ....
....
....
....
....
....
....
....
....
....

(Write part of a lament, supposed to have been made up by a Viking seafarer.)

INDEX

Abercrombie, M., 69
Ach's Test, 70
Adler, A., 15, 87
Allport, G., 19
American education, 7, 11, 21 f., 82, 88
Aptitudes, 54, 55, 66, 79, 83, 99
Army, British, 10 f., 15 f., 74, 79, 91
Army, German, 74
Art-form Test, 66 ff.

Ballard, P., 24, 41
Beerbohm, M., 54
Bowley, A. H., 27, 100
Burt, C., 89, 91, 100

Cézanne, 67
Character, 18, 37 f., 98
Chaucer, 65, 66
College Entrance Examination Board, 22

Education Act 1944, 8, 20
Elizabethans, 58, 60

Factorial analysis, 40 f., 47, 52, 54, 75, 78, 89
Fleming Report, 18, 31, 100
Fortes, M., 47
Francis, C., 68
Freud, S., 60, 100

Galton, F., 40, 44, 46, 98, 100
Greeks, 58
G-, V-, K- Tests, Chap. V, Append. I
——, sex differences, 52, 54

Hanfmann-Kasanin Test, 70

Interaction, 19, 46, 61

James, W., 47
Jeffery, E. J., 66

Lear, E., 63
Line, W., 30, 100

Mare, Walter de la, 69
Massie, A., 9
Matrix Tests, 47
McClelland, W., 27, 41, 100
McDougall, W., 37
Ministry of Education, 8, 19, 24 ff., 89, 100
Moran, Lord, 96, 100
Moray House Tests, 42
Multilateral Schools, 20

Needs, 14 ff., 30, 35, 60, 87 f., 98
"New-form" examination, 24 f., 42
Newton, 13
Norwood Report, 18, 26, 28, 100
Nuffield College, 18

Order-of-Merit lists, 89 f.

Penrose, H. L., 47
Picasso, 67, 68
Poetry Writing Test, 30, 47, 61 ff., Append. II
Projection Tests, 79, 87, 92
Psychological Corporation of New York, 22

Q-Board, 69 ff., 91, Fig. 8, Plate IV
Q-technique, 70 ff.

Rapaport, D., 70, 100
Rating Scales, 84 ff.
Raven, J. C., 47
Renaissance, 58
Rorschach, H., 32, 100
Rorschach Test, 35 f., 33 f., 39, 44, 57, 61, 73, 87, 92 ff., 102
Rowse, A. L., 58, 60, 100
Royal Academicians, 67
Royal Air Force, 33 f., 38, 47, 92

Scottish Research Council in Education, 27, 86
Sitwell, E., 60, 100
Smith, P. G., 61, 63
"Socialising," 21, 88
Spearman, C., 40 f., 43, 100
Special Place Examination, 8, 24, 41, 65, 82
Spencer, H., 46, 61, 100
Stein, G., 67, 68
S-Tests, 51 f., 92

Thinking, objective and subjective, 63 ff.
Thomson, G. H., 42, 43, 98

Vigotsky Test, 70
Vinci, Leonardo da, 60

Wertheimer, M., 68, 100

West [illegible]

Printed in Great Britain APT/P638

TEST
SCHOOL

This book is an arresting and
Intelligence and other tests i
child in a social setting. It w
those concerned with the pr
various types of Secondary S
Butler Education Act and it
teachers an opportunity of
differences and techniques ir

The book opens with
virtues of the examination
merits of testing. Subseque
and general ability as a b
and performance test, and

There are also two appen
and K-tests suitable for ten
a copy of a poetry complet

LON

T

LDREN

challenging study of the use of
n education and deals with the
ill be particularly valuable for
oblem of selecting children for
chool education under the new
sets out to give parents and
reading about the problems,
ıvolved.

a searching enquiry into the
system and into the relative
nt chapters discuss personality
asis for selection, intelligence
tests of creative imagination.
dices giving examples of G- V-
to eleven-year age groups and
ion test.

1724

GMANS